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TABLE OF CONTENTS

Selection of Students in the United States A. E. SEVERINGHAUS, M.A., Ph.D. 479
Selection of Students in the United Kingdom DENIS BRINTON, D.M., F.R.C.P. 483
Selection of Students in Canada M. M. WEAVER, M.D., M.S., Ph.D. 485
Selection of Students in Australia S. SUNDERLAND, M.D., F.R.A.C.P. 487
Selection of Students in India S. S. MISRA, M.B. 489
Selection of Students in the Philippines MANUEL D. PEÑAS 490
Physique and Performance: Honours Class at Oxford R. W. PARNELL, D.M., M.R.C.P. 491
The Value of Medical Certificates for Students entering a University GRAHAM GRANT, M.B. 497
The Contribution of Michael Servetus to the Scientific Development of the Renaissance J. TRUETA, M.D., D.SC., F.R.C.S. 507
Medical Education in the Soviet Union S. V. KURASHOV 510
General Practice: Need for Hospital Technique in the Home JAMES M. STALKER, M.D. 512

MEDICAL MEMORANDA

Fragilitas Ossium. L. C. KREEGER, M.B. 498
Traumatic Diaphragmatic Hernia. G. R. C. PEATFIELD, F.R.C.S. 498
Closed Incomplete Rupture of Pectoralis Major. W. B. LAW, M.Ch.Orth., F.R.C.S. 499

GENERAL ARTICLES AND NEWS

THE ENROLMENT IN MEDICINE 514
UNDERGRADUATE EDUCATION 515
LONDON MEDICAL SCHOOLS 515
OXFORD AND CAMBRIDGE ENTRY 517
MEDICAL SCHOOLS IN ENGLAND AND WALES 518
SCOTTISH AND IRISH SCHOOLS 520
APPOINTMENTS OVERSEAS 521
MEDICAL SERVICE OF THE L.C.C. 521
DEGREES AND QUALIFICATIONS 522
POSTGRADUATE EDUCATION 523
MEDICAL PSYCHOLOGY 526
RESEARCH CAREERS 527
MEDICAL AUXILIARIES 528
THE ARMED FORCES 528
SAFEGUARDS FOR THE DOCTOR AGAINST LITIGATION 530
DIPLOMAS IN PUBLIC HEALTH AND TROPICAL MEDICINE 530
PROFESSIONAL SOCIETIES 531
BRITISH MEDICAL STUDENTS' ASSOCIATION 532
ATHLETIC ACTIVITIES 533
OBITUARY 541
VITAL STATISTICS 544
MEDICAL NEWS 546
QUESTIONS AND COMMENTS 547

LEADING ARTICLES

Selection of Medical Students 501
Types and Shadows 502
Study in the United States 503

ANNOTATIONS

Employment Prospects 504
Her Majesty's Overseas Civil Service 505
The Formal Lecture 506
Medical Assistants in the Tropics 506

CORRESPONDENCE

Blood Groups and Disease. J. WALLACE, M.D. 534
Contact Lenses. J. M. ANDERSON, M.D. 534
Fractures Complicating E.C.T. B. WHITCHURCH HOWELL, F.R.C.S.; LOUIS ROSE, M.R.C.S. 535

SUPPLEMENT

Full Contents on First Page of Supplement

Successful Regional Whitley Appeal ..101
Criticism of Whitley Councils 101
Correspondence:
Drugs for Private Patients. R. HALE-WHITE, M.D.; A. G. EDDISON, M.B.; J. DIXON GREEN, M.D.; C. H. BARBER, D.M. 102
Private Patient in General Practice. NEVILLE DAVIS, L.M.S.S.A.; J. F. BURDON, M.B. 103

CORRESPONDENCE—*cont.*

Organic Syndromes Presenting as Involutional Melancholia. DWIGHT L. MOODY, L.R.C.P.Ed. 535
Infant Feeding. A. GEORGE, M.B. 535
Obstetric Anaesthesia. W. MAXWELL PENNY, M.D.; R. G. APTHORPE, M.B. 535
Child Guidance Clinic. G. S. PRINCE, M.B. 536
Varicocele and Subfertility. R. G. HARRISON, D.M. 536
Acute Appendicitis in Childhood. B. STONE, M.R.C.P. 536
Rehabilitating the Disabled. J. DODD, B.Com. 537
A Mouthful of Wire. G. A. KERR, M.R.C.S.; J. MENZIES CAMPBELL, D.D.S.; D. C. HALL, M.B.; F. LEONORA FRANKS, L.D.S. 537
An Early *X*-ray Picture. J. F. BRAILSFORD, M.D. 538
Virus Chemotherapy. W. N. LEAK, M.D. 538
Diabetic Degenerative Complications. H. WHITTAKER, M.R.C.P. 539
Hydrocortisone. B. SOLOMONS, M.B. ..539
Poliomyelitis. D. L. FERGUSON, M.B. ..539
Assessment of Mental Defectives. C. G. MILLMAN, M.R.C.S. 540
Immunity. L. G. JACOB, M.B. 540
Methylpentynol. VIOLET B. YOUNG, M.B. 540

BOOK REVIEWS 500

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LONDON SATURDAY AUGUST 28 1954

The following six papers on the selection of students for medical schools were read at the First World Conference on Medical Education held by the World Medical Association in August last year. They will appear, with the other papers read at the Conference, in the Proceedings to be published early in October by the Oxford University Press.

SELECTION OF STUDENTS IN THE UNITED STATES*

BY

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I have been asked to say something of the methods employed in the United States to select students for the study of medicine. In doing so I must discuss some of the problems of admission with which we are faced, and the ways in which we attempt to meet them. What I shall have to say will, of course, be influenced by my own personal experiences, for I have been chairman of the Committee on Admission at Columbia University's College of Physicians and Surgeons for many years, and have during that time taken responsibility for the admission of 14 classes numbering approximately 1,600 students. In selecting these students we have reviewed some 25,000 applications.

In the United States, probably in no professional group are school applicants more carefully screened than those who apply to enter medical school. The responsibility placed upon an admission committee to decide who should be accepted and who rejected is great. For that reason new tests and screening devices are being developed. We have long since passed the stage of general intelligence tests and aptitude evaluation, and now have available more modern psychological and psychiatric examinations which are designed to appraise emotional stability, personality, and even motivation. Someone has facetiously remarked that the first term of professional education might well be best devoted to exercises, tests, and examinations to determine whether the student should be allowed to matriculate in the regularly prescribed course of study.

I am not personally qualified to discuss these newer tests, for we have not yet made use of them at the College of Physicians and Surgeons. I should, however, not wish to create the impression that we are opposed to their use, or that we have no interest in their development. We do, however, believe that many of the tests are in an experimental stage in which they are themselves being tested. Whether they will survive or be abandoned will depend upon some future analysis of their predictive ability.

A Perplexing Situation

There can be no doubt but that the large number of persons wishing to study medicine in the United States compared with the limited number of places which our medical schools provide has resulted in many of the perplexing problems related to admission. In 1948 there were 24,242 applicants for 6,458 places; in 1949, 24,434 for 7,042; in 1950, 22,279 for 7,182; in 1951, 19,920 for 7,381; and in 1952, 16,760 applicants for 7,425 places. Thus the ratio of applicants to available places in the freshman class in the last year was 2.2:1. It is expected that the relative number of applicants will rise again in the next few years, following the steady increase in college enrolment now in effect. Thus to-day and in the future it can be expected that less than half of the persons who apply for admission to medical school can hope to be accepted, and many medical schools, especially those which are privately endowed, will continue to have from ten to twenty applicants for each available place in their freshman classes.

But this situation has not always existed. The first two medical faculties to be organized in the United States—one in Philadelphia, and the other in New York, the latter of which I have the honour to represent—were related to the university, and set in those closing years of the eighteenth century a pattern of university professional education which unfortunately was destined to be abandoned during the nineteenth century. For between 1810 and 1910 our country produced 457 proprietary schools of medicine. These commercial ventures in education were born with alarming rapidity, as our country entered a phase of phenomenal growth and expansion with large areas and vast populations left without medical care. Many, including some unscrupulous men, saw financial profit in organizing trade schools to produce physicians. For a price and with very little ability or effort one could become a physician.

There was in those unfortunate days no problem of screening applicants. The schools ran advertisements in the daily press to attract students. One recalls the statements of President Gilman at Johns Hopkins that medical students of this period "were young men who could not enter the lowest class of a respectable college," and an even more withering comment that the medical student was likely to be the "one son in the family thought too weak to labour on the farm, too indolent to do any bodily exercise, too stupid for the bar, and too immoral for the pulpit." Well, we have come a long way since those early days of deteriorating standards of education. Strangely enough, we are now again facing the threatening forces of deterioration—this time not from a paucity, but from a vast surplus of applicants who are pressing our schools to admit more students than can be taught effectively. We can see the defences breaking in some places, but the main

*A paper read in Section A at the First World Conference on Medical Education, London, 1953.

positions of medical education are not yet in danger. Our educational standards have been firmly established and generally appreciated; the public demand to-day is for more doctors, but at the same time for qualified doctors.

Qualities Required in the Applicant

This brings us to the heart of the problem of admission. Just what do we mean when we say "qualified"? And how are we to determine among the many applicants those who give the greatest promise of becoming the qualified physicians of the future? It is relatively simple to outline the qualifications which an applicant for medical school should have, but it is difficult to devise ways and means whereby we discover the presence or absence of some of these qualities. It is even more difficult to describe for someone else how we attempt to discover them. Let me illustrate. I look for a quality which, for want of a better term, I call "warmth." I feel reasonably certain that I can discover it when it is present or detect its absence. But I would feel wholly unequal to trying to say how I arrive at a decision in this matter.

In turning our attention to the first of these questions, we must note that the field of medicine offers a diversity of professional opportunity, perhaps unequalled by any of the other professions. The medical school should admit and educate persons whose ultimate professional goals may be teaching, research, administration, private practice, public health, or industrial medicine, to mention only a few of the many opportunities.

It is obvious that a "standardized applicant" is not the answer to a committee on admissions. No one person could possibly present optimum qualifications for each of these specialized areas of medicine. And yet there are certain basic qualities which are desirable in all applicants, regardless of the specialization they may decide upon later. Agreement on these common basic qualifications and the best means of finding out whether or not they are present in an applicant are the two chief problems to which our own committee on admissions continually gives its attention.

In discussing these basic qualities it would be well first to look briefly at the place the medical graduate is expected to occupy in society, and the responsibilities he must be prepared to meet. Under the American system professional men participate largely in public affairs, and not infrequently help to set the fundamental pattern not only of community but of national life. Upon them naturally fall great responsibilities of citizenship. In so far as our citizens control their government they must do so in addition to the heavy demands of their own professional work. Although our professional school faculties concern themselves primarily with the development in the student of professional competence, they remember also that a professionally competent graduate without a sense of social responsibility is a wholly inadequate person. The first essential in education is to develop in students the ability and habits of mind which will equip them to assume the responsibilities of citizenship. Only by being prepared to give, and then by giving their time and their talents to the public good, can professional men preserve a free democratic society in which they may effectively carry out their professional duties.

But even competence and social understanding are not enough. "To what end," asks the late President of the Carnegie Institute of Technology, "will professional men direct their energies and abilities? The character of their pattern depends not alone upon their technical ability nor yet upon whatever ability they may have in dealing with human and social situations, it also depends—depends critically—upon their attitudes, upon the way they look at things. These attitudes have some of their principal roots in value judgments; and these judgments in turn can depend critically upon education."

In a few words I have tried to outline the basic philosophy which guides our own committee of admission in the selection of students. We have agreed upon the qualities we hope to find in our applicants. These are the promise of professional competence, together with a basic integrity, both inner and social, and a personal sense and appreciation of those fundamental values upon which our American democratic institutions rest. "Social sensitivity, selflessness, a tolerance of differences among people, sincerity, respect for truth, reverence for life and personality and for the dignity of man"—these are qualities which form the foundation for a successful career in medicine.

It is perhaps true that the record of a student's past accomplishment is the most accurate indicator of his future achievement. "Let us have a look at the record" is a saying with which all citizens of my home State are well acquainted, and which they associate with one of our former Governors of New York, Alfred E. Smith. The statement makes sense. But the important thing is to decide what we mean by "the record." We do not mean "the academic record" made in the liberal arts college, although this is a part of "the record." We do not even mean a comprehensive description of all phases of activity that a student has engaged in during his college years, although this, too, becomes a most important part of the record and is becoming more readily obtainable. We are interested in knowing as much as we can about the life record of the candidate up to the present time, and especially how he has developed in respect to his environment and his background.

Sources of Information on Qualifications

What are our best sources of information? The liberal arts college, which has been the applicant's residence and home during the two or three years directly preceding application to medical school, is naturally the best and most readily available source of information concerning his general qualifications for the study of medicine. Most colleges are aware of their responsibilities in this regard, and have given increasing and careful attention to the selection and appointment of advisers and advisory committees whose duty it is to gather as much information as possible about those students intending to study medicine. The best of these committees now have the co-operation of all of the student's teachers, each of whom submits to them his personal evaluation. In some instances the final evaluation of the student is made at meetings in which the instructors personally present their divergent opinions of the student. In one school which does an outstanding job of evaluation the student's photograph is projected upon a screen to bring the individual clearly into the minds of his many teachers. Through careful discussion they arrive at a consensus which constitutes the recommendation that will go to the medical school in support of the student's application. We need many more college committees of this kind.

Let us look briefly now at the data which would naturally come before such a committee meeting. The academic record is usually discussed at the start, for in the college this is a rather simple matter. The grades received in course are a matter of record. How well the student has done can be seen by a glance at the relative number of A's, B's, C's, D's, E's, and F's which appear on the transcript. But the good committee must go further and offer an opinion on the meaning of the grades. In doing so it should discuss such questions as: What was the student's work-load? Was he carrying a full academic programme? Did he engage in college activities? Did he work for self-support? What was the state of his health, etc.? Without full knowledge of these and other modifying factors academic grades can be very misleading. The committee on admissions at the medical school is faced with an additional important question even though the college may have provided the fullest information concerning grades. What does the grade at the particular college mean, when compared with similar grades given at other colleges? Through years of experience we have built up a system of comparative college ratings which may tell us, for example, that a grade of A in school X is more nearly the equivalent of a B given in school Y. Thus even the academic record, which appears to some to

furnish the only valid and objective information concerning a student's ability, is found to be a very uncertain and unsatisfactory basis of evaluation unless the many modifying factors are known and taken into account.

But the liberal arts college can give the medical school far more information than the academic record shows. If the college faculty and administration have learned to know their students intimately—and many have—they can speak with confidence concerning the character of the applicant. his basic integrity, his sense of values, his attitude towards others in the college community, the response in turn of others to him, his emotional stability, his motivation, and his sense of social understanding. They will know if he has shown capacity for work, and given evidence of qualities of leadership. The inclusion of such information in college letters of recommendation is essential, and no other source of information is likely to be quite so reliable. Any applicant can get a few good character letters from his own particular sources. Only when personal letters come from known and established individuals do they have much value for a committee on admissions.

In our recent survey of pre-professional education in the United States it was gratifying to note not only the increasing development of advisory committees in the colleges but also an increased liaison between these and the admission committees in medical schools. There is nothing more helpful in evaluating a letter of recommendation than to know the individual who writes the letter. College advisers are beginning to visit the medical schools as some medical school admission officers have for some time now visited the colleges. By meeting together to discuss and understand better the problems and objectives both college and medical schools face in the matter of professional school admissions, we shall make fewer mistakes in selecting our future physicians.

Two additional sources of information are available to the medical school committee on admissions. The first is the medical school admission test developed chiefly through the efforts of the Association of American Medical Colleges. Almost every college student who plans later to study medicine takes this test while he is in college. The results are furnished to the medical schools to which the student applies. This test is discussed elsewhere in this series. I wish to say only that future correlations of achievement in medical school with the scores made by the students in these earlier examinations will be awaited with great interest, and will determine largely the importance to be ascribed to this test in evaluating a candidate for medical school. The test must be given in essentially unmodified form over a period of years before any significant correlation can be made. Preliminary studies indicate that the medical school admission test will become useful. At present we find it very informative in comparing the achievement of a given student with the achievement of other students in his own college who have taken the tests. An outstandingly good examination by a student in a college where the average performance is mediocre, or vice versa, is significant information.

The central office of the Association of American Medical Colleges has in recent years, under the able leadership of Mr. John Stalnaker, undertaken a large number of studies designed to assist the admission committees of medical schools. A most useful record available to us, for example, is a report on the achievement of students who have gone on to medical school from any given college. Year after year the admissions from the college to medical schools are recorded with data indicating how many of these same students pass, fail, or have encumbered records. Data of this character add evidence of importance to the total evaluation of students' applications. Moreover, such data are having a profound and wholesome effect upon the general quality of applicants. I need only to point out that many colleges have been under great pressure to get their students into professional schools. Some premedical advisers have been made to feel that this is their only job, and that their success or failure is measured by the percentage of applicants who succeed or fail to gain admission. When the colleges realize that it is not the number of students who get into medical school but the number who successfully complete their education which is significant, these pressures on advisers will relax. Advisers, then, are becoming rightly as much concerned with keeping unsuitable students out of medical school as they are in entering those who are qualified. This twofold service is now recognized as one of the most important contributions a premedical adviser can make either to the prospective applicants or to the schools concerned.

The Personal Interview

The personal interview, if properly conducted by an experienced interviewer, can provide invaluable data not readily available from any other source. If, as some believe, it is the most important of admission procedures, it is at the same time certainly the most difficult to administer and evaluate. It is usually reserved for those students who have survived a variety of previous screening devices, for it becomes virtually impossible as well as impractical to attempt to interview every applicant. At our own school we interview about 500 out of every 2,000 applicants. We admit no student without an interview, and it is through the interview that we attempt finally to select the 120 best qualified applicants.

I can give no directions for the personal interview, other than to say that the interviewer must be experienced. For this reason we lay great importance on the fact that our own admission committee does not follow the usual pattern, in which there is a rapid turnover of membership. Most of the present committee have served nearly ten years. They look upon their job as the most important assignment in the medical school, and they have worked faithfully to develop aptitudes in this area, as one should work at becoming a better teacher or research worker. The members of our committee were selected in the first place because of their native personal qualities, especially in the area of human understanding. They are all individuals to whom students readily go for help and advice. You just naturally feel comfortable when you are with them. Without trying, they put the other fellow at ease. They like people and understand them.

The personal interview must remain personal. It may not be standardized. It should not follow any set pattern. Students should not be able to prepare for it, nor should they be coached for it by premedical advisers. It must be a frank and easy conversation in which the student feels free to talk honestly and intimately about himself to an interviewer in whom, though he has never met him before, he quickly develops complete confidence and in whom he senses a further friendly and sympathetic understanding. Such an interview will provide valuable data not available elsewhere, and if it is not able to do so that fact is in itself significant. The interview which merely corroborates information the committee already has is a wasted interview. It should especially provide the opportunity to discover a student's attitudes. Is he a happy person, a friendly person? Has he accomplished more than the tasks which others have assigned to him? How does he use his "own time"? Does he give to life something in exchange for what he is getting? How does he regard competition? Has he really worked at those things for which he happens to express enthusiasm? Has he a wholesome breadth of interest, a spirit of co-operation, of give-and-take in life, of the responsibilities of companionship or the qualities of leadership? Needless to say, the interview cannot be short and hurried, for information of the nature which it should provide is not cranked out on a production-line schedule.

Two Significant Trends

I should like to give some attention to the liberal arts college curriculum the prospective medical school student is advised to follow. In years past his programme was rather

heavily weighted in the sciences basic to medicine—namely, biology, chemistry, and physics, and the prerequisite courses in mathematics. There are in America to-day two significant education trends or movements which are having a profound effect, especially upon the college curriculum which is provided for the premedical student. The first is a strong movement in support of a return to liberal or general education for all students. The second is a pronounced trend which places more emphasis upon the social sciences. Both are, I believe, directly related to the spirit of the time in which we are living to-day. Both are, in my opinion, highly desirable and full of hope and promise for the future.

The "so-called" premedical student has in fact focused attention upon one of the most important issues in higher education to-day—namely, the conflict between vocational and liberal education. Our American colleges, founded upon the Oxford–Cambridge tradition, have from their earliest days considered it their chief objective to provide a broad liberal education for all students. An expanding materialistic philosophy, hall-mark of the first half of the present century, has forced the colleges to provide an ever-increasing practical and vocational training. Training for the job has been the watchword; concern for a good job has overshadowed an appreciation for a good life. But to-day many have begun to wonder whether "the command of nature has been put into our hands before we are able to command ourselves"; to wonder whether the great culminating and synthesizing disciplines of history, philosophy, and religion, in which one most readily gains some better insight of himself, have gone too long unnoticed and neglected. Colleges throughout the land are happily reasserting with courage and increasing fervour that their chief mission is to prepare all of their students for successful living, regardless of whether or not they should plan to enter a professional school after graduation. A broad cultural background offered as the best preparation for any future job, including the job of being a good citizen, is again becoming the accepted pattern of liberal arts education.

The result of this trend on the so-called "premedical student" has been an increased interest in the humanities, and a falling away of programmes calling for heavy concentrations in the sciences. This trend is not wholly without danger to the future of medicine. At this point I would caution that liberal education does not mean a familiarity with the disciplines other than the natural sciences. A knowledge of science and its contributions to human progress is as essential to cultural development as is an awareness of the contributions of history, philosophy, and religion. Moreover, the almost miraculous progress medicine has made in the past fifty years we owe to the discoveries made in the basic sciences. We have not completed the conquest of disease. Important discoveries of the future are impatiently awaited, and they will come only if devoted men and women continue to be thoroughly prepared in the sciences.

The second trend has resulted from the untiring efforts of many persons, both within and without the profession of medicine, to place more importance upon the social sciences. Future progress, they contend, must concern itself with the application of our knowledge and skills to human needs. We must deliver more quickly, more widely, and more completely the benefits of modern medicine to all mankind. No one could fail to give enthusiastic support to these objectives, nor would anyone question that the social sciences can provide the understanding and motivation necessary to hasten their accomplishment. But once again let me caution that future discoveries in medicine will be made by those who are well grounded in the sciences, and that no amount of social understanding can replace the weapons of science in the battle against disease. Such provocative statements as that of Julian Huxley, who ventures that "so far as any major future advance is concerned in the evolution of this world's stuff, it will likely be not in the biological but in the social sciences that the world will reach its new possibilities," should not precipitate a wholesale substitution of social science for natural science in the preparation of those who wish to enter the field of medicine. What is essential is that we bring our social understanding abreast of our scientific knowledge. The two must go forward hand in hand.

Conclusion

I have tried to give some idea of the qualities we seek in those who are to become the future physicians in America. I have tried to describe not only the techniques we employ but also the difficulties we face in our medical schools in attempting to select for education the best qualified persons from a group of applicants greatly in excess of the number of places available in our schools. I have tried to describe briefly certain basic trends in American liberal arts education which are modifying the educational background of our future medical students. I wish finally to point out one or two factors, entirely outside the province of the professional school of the preparatory college, which are having an important impact upon the selection of medical students and upon the future quality of physicians in America.

I refer, first, to the problems which arise in our great metropolitan centres, where quite naturally we find a concentration of medical schools. In these large local populations we find also a concentration of aspiring applicants. This has resulted in strong political pressures on privately supported schools to give preference to local applicants, on the ground that the local community by granting tax exemption to the school, and contributing largely to its support, is thereby entitled to benefit in return by having its own citizens given priority or preference when they apply for admission. Our school, for example, would, however, insist upon its obligation to serve not only the local community but the nation and even the world community of nations, and therefore upon its right to seek to this end the best-qualified students regardless of residence. In fact, a wide geographical distribution of highly qualified students is inevitable if we are to discharge our obligations. There is in this situation clearly an unavoidable conflict between local interests and educational objectives. Even more unfortunate is the fact that racial, religious, and political minority groups have in some places seized upon this situation to further their own advantages. They have charged that geographical distribution is a cover-up for discriminatory practices in admission. Unjustified and bitter attacks have on occasion been vigorously waged against the schools.

In some instances medical colleges have been accused of violating our recent and highly desirable legislation, legislation designed to ensure fair practices in education and employment and guaranteeing to all men equal opportunity regardless of race, creed, colour, or national origin. These conflicts have greatly interfered with, and often hampered, admission committees in their work, adding to their already arduous and time-consuming task.

A second difficulty arises in respect to State and municipally supported schools of medicine which quite properly, if not wisely, restrict their admissions largely to their own residents. Many of these schools could select a more highly qualified class if they were free to consider non-resident applicants. Some of these schools are finding it very difficult to locate a sufficient number of students, even with mediocre requirements, to fill their classes, while highly qualified non-residents are failing to gain admission. This situation must inevitably lead to lowering standards of medical care in the future. Unfortunately it affects not only the State in which the school is located but other States as well, for statistics show that a considerable percentage of students who graduate from State medical schools eventually practise in other States.

In spite of the circumstances in which both privately endowed and publicly supported medical schools find themselves, and in spite of the almost insurmountable difficulties which at times face committees on admission, the new recruits to the ranks of the medical profession are unquestionably of a high order, and the future of medicine can be entrusted with confidence to their care and keeping.

SELECTION OF STUDENTS IN THE UNITED KINGDOM*

BY

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The devices for selecting medical students in the United Kingdom are probably little different from those employed in many other parts of the world; but to give a fair picture it is necessary to sketch the background which has influenced this primary activity of our medical schools over the past few years. The salient features of this background are: (1) the overriding insistence on autonomy of choice; (2) a steadily increasing interest in the procedures of selection; and (3) the number and quality of the applicants. There is a further feature of the background which has perhaps not yet concerned the authorities in this country so much as it should—that is, (4) the general relationship of the national intake of students to the national need for doctors.

After discussing these four aspects of the background I want to consider the relatively simple procedures we use. I should make it clear at the outset that, though I have been concerned with selection in one of our London schools until a short time ago, these responsibilities have now ceased. I do not represent any school or university at this Conference. All opinions here stated are my own.

1. The Overriding Insistence on Autonomy of Choice

The colleges and schools of our universities have always jealously guarded the privilege of selecting for themselves their undergraduate members. Although no serious attempt has ever been made to have selection transferred to a central authority, tentative suggestions that such a plan might solve any of our present problems has produced a storm of resistance more than once in recent years. Quite apart from the certainty that this attitude will not be changed, I am convinced that it is right. Some may think that we in this country pay too much attention to tradition, but the traditions of each unit of a university determine the character, not only of the part, but of the whole. Absolute power of accepting or rejecting any candidate who seeks admission is a basic necessity for preserving the individuality of a school, and ultimately of the university of which the school is a part. When the annual number of applicants greatly exceeds the number of vacancies, when many applying are unsuitable, and particularly when many applicants simultaneously apply to two or more schools, the advantage of a central clearing-house for applications is obvious. These circumstances have existed for a number of years in London; yet the twelve medical schools of the University of London have preferred to shoulder the considerable additional burden imposed by decentralized selection than to have their task made easier at the expense of their privilege. They have found their attitude supported by their university.

2. The Increasing Interest in Selection Procedures

Since the end of the second world war the heads of the colleges and schools of the universities have been compelled for two main reasons to take an increasing interest in methods of selection. The first of these is the vastly increased number of applications for entry, and the second the undoubted success of modern procedures, typified for us by the activities of the War Office Selection Boards constituted during the war for selecting officers from other ranks.

*A paper read in Section A at the First World Conference on Medical Education, London, 1953.

The causes of the flood of applications need not here be analysed. What must be stressed is that these causes appear to be permanent and that, because many applicants for too few vacancies inevitably means disappointment, an inescapable sequel is multiple applications—that is, a tendency for each candidate to apply at the same time to more than one appropriate school or college. The nuisance of multiple applications has been held by Harris (1948) to be mainly a local one, but it probably reaches its zenith in the twelve medical schools concentrated in London University. It is not unknown for a single candidate to apply to all schools, though most applicants are more optimistic, or less obsessional, in their approach. Because the least able candidates meet with the greatest difficulty, it is they who apply to the largest number of schools. In consequence there is a large circulating group of relatively unsuitable persons encumbering the machinery of selection in every school. It follows, too, that these multiple applications make an exact national calculation of the ratio of applicants to annual vacancies a matter of extreme difficulty. The aggregate of the applications for all the London schools, for example, will be considerably greater than the number of applicants. Yet, if the problem of selection is to be wisely handled, the number of persons applying for the available vacancies throughout the country should be accurately known. The Conference of Deans of the Undergraduate Medical Schools of London University has instituted an inquiry into this question of multiple applications. If it is largely a local matter, such piecemeal private investigations will probably help, but it is to be hoped that other geographically linked schools may take similar steps.

The War Office Selection Boards of the British Army quickly revealed that they had a better capacity for selecting officers than the older, more haphazard methods. But the essence of their ability, in the opinion of many, lay not in the employment of psychiatrists or psychologists, nor even perhaps in more appropriate tests, but in prolonging the period of testing over two or three days and causing a number of selectors to live with a few candidates during the whole of this time. The stage was deliberately set for a much longer period of much closer observation. Other bodies, notably the Civil Service, have successfully copied this plan, but it unfortunately cannot be applied to the medical schools. In each of these, ten times as many candidates may apply each year as there are vacancies; the selectors are teachers fully occupied with other duties; and most of the candidates are with difficulty allowed so long as a day from their school duties to enable them to attend the selection procedure. Nevertheless a study of the War Office Selection Boards underlines the importance of an adequate interview, and suggests that useful information can be gained from special methods such as intelligence tests and small discussion groups.

3. The Number and Quality of the Applicants

For a year or two immediately after the end of the second world war there was a steep rise in the number of applicants, but their quality was high. In the last two years numbers remain large, but quality is manifestly diminishing in both academic standing and perhaps particularly in the personal traits required for the medical profession. The reason for the success of the ex-Service applicants was no doubt the gradual concentration of several annual groups of applicants in the armed Forces during the war, and the much faster release of these more responsible, mature potential students when the Services rapidly disbanded. In the main we saw a group of men and women whose keenness to embrace the career of medicine had survived the frustrations and tedium of war service and whose enforced delay in beginning the medical course made them determined workers once they were accepted.

But the recent decline in quality probably represents more than a mere return to the ordinary pre-war type of applicant. There are to-day certain powerful but undistinguished motives for becoming a doctor. For example, many parents

see that there is now no bar to a child's qualifying for a medical school, provided only that he has succeeded in his school-leaving examinations. For a number of these parents a professional status for their children may represent a social advance. Again, the terms and conditions of the National Health Service have, rightly or wrongly, increased the sense of security felt by parents for a son or daughter who means to make medicine a career. Moreover, to be enrolled as a medical student is one of the few ways left to a boy of postponing his period of National Service (conscription) and of directly entering one of the armed Forces of the Crown as an officer. As motives decline, a poorer class of applicant will be attracted to the medical schools. It is certain that a much higher proportion of applicants may to-day be safely thrown into discard without interview than, say, in 1946.

4. The Relationship of the National Annual Intake of Medical Students to the National Need for Doctors

Not long ago I was asked in one or two places abroad for my comments on the proposal to found a new medical school. In these environments it seemed obvious that, before any such proposal could be considered by those in authority, a strong case would have to be elaborated for a local need for doctors, or at any rate for an ability to export doctors. In this country, with its concentrated population and many medical schools, no effort has yet been made, so far as I know, to discover whether the number of persons annually qualifying as doctors exceeds, is equal to, or falls short of, the number of doctors who cease to practise each year by reason of death or retirement. Already there are ill-informed rumours of the difficulties of some of our newly qualified men and women in obtaining employment. Certainly we still receive as imports a significant number of qualified men from our Dominions and Colonies, some of whom remain to practise in these islands. As surely, certain services, such as the Indian Medical Service, have ceased to be available for men who qualify in the United Kingdom, and the opportunities in other services are for various reasons diminishing. On the other hand, now that the National Health Service has been in operation for five years, the pattern of the medical personnel needed, *and able to be afforded*, by the nation has never been more open to analysis. It is as important to avoid making too many doctors as it is essential to see that enough qualify each year to balance the inevitable wastage. If doctors become unemployed, the present glut of applicants for the medical schools may by the swing of public opinion be turned into a lasting deficit almost overnight. If the Health Service goes short of the medical personnel it can afford it will be a poorer service.

The balancing of the intake of medical students with the nation's need for doctors is a matter of far too great importance to leave to chance. A university or a medical school is too small and too specialized a unit to think and plan on national lines. The Ministry of Health in this country has or can obtain all the data concerning the national need for doctors, but is totally unfitted for dealing with the universities. The University Grants Committee, which already has great experience and enjoys the confidence of the medical schools, should be entrusted with the duty of discovering the facts on each side of this interesting equation.

The Selection Procedure

The procedure of selection in the United Kingdom is conveniently divided into three stages. The first stage involves the careful perusal of the application form and confidential report of each candidate, and acts as the filter which retains for interview only those from whom the final choice of successful candidates is to be made. The second stage is the interview and any modifications of this that may be used in a given school; for example, Aitken and Johnson's (1952) experiments. The third stage includes the whole of the student's first year in the school.

The First Stage.—When the number of applicants to a school becomes large it is impossible to submit each candidate to an interview. It is already doubtful whether this is strictly necessary, since a great many of the applicants can be judged to be unsuitable merely from application forms and confidential reports. Perhaps two or three times as many candidates as there are vacancies will be allowed to pass to the second stage; but two-thirds of the total number of applicants will have been rejected outright.

The Second Stage.—To-day in nearly all schools the main instrument of selection for candidates who survive the first stage is the interview. In the past a few schools added an entrance examination in appropriate subjects; but the large numbers of applicants have made this an impossible burden on the teaching staff, and it is probable that sufficient information on the academic status of a candidate can be gained from his documents. For some years at my medical school each candidate was required, during the hour immediately succeeding his interview, to write an essay on a subject chosen at random. This had the advantage of frankly revealing the illiterate; but it was so rare for the essay to make any difference between acceptance and rejection that the not inconsiderable work of its correction did not seem to be justified. We now use the time taken for the essay for an appropriately devised intelligence test. As others have found, the results in this test cannot be correlated with performance in subsequent examinations; but it probably has the value of excluding most candidates who lack the intelligence to benefit from a university education. Intelligence tests, however carefully devised, cannot hope to predict later academic performance, since such proficiency demands many other qualities besides basic intelligence; for example, persistence, interest, equanimity—character traits which tests of intelligence do not endeavour to examine.

The Interview.—Although the form of the interview varies considerably, its aim is to assess each candidate from the viewpoint of personality. Not a few trained psychologists have been critical of the value of such interviews, since as tests they are incapable of standardization and control and may clearly be vitiated by the prejudices of the interviewers. But as yet there are no scientific ways of measuring personality, in the sense that pure intelligence can be measured by standardized intelligence tests, nor any method that does not in the end depend upon human judgment. Moreover, some interviewers do undoubtedly develop the capacity to judge the suitability of a candidate, although they are usually unable to state the mental processes involved in such a judgment. Other men, however expert in their particular academic fields, never learn how to select. It follows that interviewers must be carefully chosen, and that a choice is difficult unless a selector is observed at the job of selecting. A school is therefore wise to establish some means whereby each new selector serves in a temporary provisional capacity with other men of proved ability before he is permanently appointed to the panel of selectors. A board of selectors is the obvious answer to this and some other problems of interviewing.

There is much variation from school to school in the size of selection boards. In my medical school we have found that a board composed of three selectors is the most useful. It is not too large to frighten the nervous candidate into dumbness, nor too small to provide training for new selectors. We have employed up to six of these three-men boards to sift the short-listed year's applicants.

From place to place the time spent on an interview widely varies. There is virtually nothing to be said in favour of the two-minute interview, in which the candidate has only just time to sit down before he is dismissed. I would almost as soon choose from an application form and confidential report alone without any interview. On the other hand, pressure of work with the present numbers has made it impossible for us to allow an average time of more than 20 minutes for the interview, with prolongation to 30 minutes in some difficult cases. We add perhaps five minutes after the candidate has left the room for the board to come to a decision. But even an interview of this duration is clearly

far from being a perfect instrument for assessing personality and traits of character. A number of nervous candidates may fail to do themselves justice; and a few who will make bad doctors because of emotional hardness or aggressiveness or a simple inability to play their part in the pupil–teacher relationship may manage to conceal these undesirable traits in the 20 minutes during which they are before the board. To overcome these difficulties Johnson (1952), of University College, London, has suggested adding group discussions to the interview. I have no personal experience of this method, but it appears to be an attractive supplement and not to absorb an impossible amount of time.

The Third Stage.—The third stage of selection is more open to controversy, and yet it seems to me to play a not less important part in the procedure than the rest. This stage of prolonged observation may be said to occupy the whole of the first year and to culminate in the university examination taken at the end of that time in the elementary sciences—chemistry, physics, and biology. In the medical schools of the University of London it therefore involves only those students who have entered at what is called the premedical or First M.B. level. These are nearly always students who have joined direct from school—a group peculiarly apt to be thrown off balance by the easier discipline of a university curriculum and the unaccustomed distractions of living in a great city without supervision except during the hours of work. On joining as students they are informed that, although a failure in any part of the examination at the end of their first year will automatically mean that they cease to be members of the school, freshmen so often have difficulty with the change of academic discipline that the lecturers are ready to give special individual help throughout the year to any who request it. They are also told that preliminary class examinations will be held in the three subjects half-way through the year, to enable progress to be judged, and that these examinations are just as compulsory as the public university examination at the end of the year.

Experience has shown that a student who fails the premedical examination seldom avoids worse trouble with the later preclinical and clinical examinations, whereas those who have obtained exemption from the premedical examination and who enter at preclinical level (anatomy and physiology) usually pass their subsequent examinations without difficulty. If a student has to leave the school on academic grounds, it is proper that this should be done at the first available opportunity—that is, at the end of his first year—and that his place should be taken by one of the many other applicants to-day desiring to receive training as doctors. The objection that in accepting a student the school owes him the duty of getting him through his examinations takes no account of the fact that it is impossible to make more than an informed guess at the academic suitability of any candidate, even with the most painstaking selection procedure. Moreover, an accepted student must to-day be deemed to be aware of the need to show that he is worthy of keeping the place which he has won in the face of great competition. Elimination during the third stage may perhaps account for 15 to 20% of the premedical entry.

REFERENCES

Aitken, J. T., and Johnson, M. L. (1952). *Lancet*, 2, 409.
Harris, A. D. (1948). Ibid., 2, 317.
Johnson, M. L. (1952). Ibid., 2, 876.

Regular visits to the homes of patients are the basis of a course of social and environmental medicine required of all students at the Vanderbilt University School of Medicine, Nashville, U.S.A. The idea is to impress on the students the importance of social and emotional factors in medicine, and the need to understand people as well as acquire scientific knowledge. The course is described in the August issue of the *Journal of Medical Education* by Dr. JOHN B. YOUMANS, the dean, and MARIAN E. RUSSELL, professor of medical social service at the school. The student acts as family health adviser to selected families during his four years' course.

SELECTION OF STUDENTS IN CANADA*

BY

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The entrance requirements of the twelve Faculties of Medicine in Canada are quite uniform and are much the same as those in the United States. Applicants for admission must have completed the twelve elementary grades and, in addition, must have obtained credit for at least three years of work in a college or university.† In certain Canadian institutions two of the three "premedical" years are completed while the student is registered in the faculty of medicine.

Premedical Requirements

The premedical curriculum at the University of British Columbia was developed before the establishment of a medical school in Vancouver. Since it was designed in such a manner that those who completed it successfully could meet the entrance requirements of any faculty of medicine in Canada its content may be examined with interest. Included in the course of study are two years of English, one year of mathematics, three years of chemistry, two years of physics, and three years of biology and zoology.

It will be noted that about one-half of the basic or minimal premedical course thus outlined is devoted to the natural sciences. The required courses in English and mathematics reduce the student's options somewhat further. It is usually advised that elective premedical courses be selected to conform with the language and other requirements for a bachelor degree; this is in case the student is not accepted by a medical school. When this advice is followed, two years of a language other than English will usually be added to the premedical student's curriculum.

Such a preparation for the study of medicine cannot produce the "variety of educational backgrounds" which might be advantageous when the future of the profession is considered. The medical schools in Canada believe that a broad general education should underlie the medical course, but none feels that this can be provided in the time which a goodly proportion of the premedical students are prepared to devote to this phase of their education. It is to some extent a corrective measure that Canadian medical schools give preference, within the limits of good scholarship, to the applicant who possesses a bachelor's degree. Such candidates for admission will have at least four years of preparation beyond junior matriculation, or three years of college work beyond senior matriculation.

Where a premedical student is judged to have sufficient ability to complete the medical course successfully, and he elects or is required to spend a fourth year in the Faculty of Arts and Sciences, experience has shown that he must be warned emphatically not to anticipate medical-school courses in bacteriology, biochemistry, histology, or physiology. Such counselling carries with it a serious responsibility, because it is not the intention to discourage the students with more outstanding ability from pursuing honours courses in the sciences.

Most of the medical schools in Canada require a premedical average of 65% (second-class honours). Contrary to the situation in the immediate post-war years, there is not at present any observable surplus of applicants with such an average. Increasingly, the screening committees in our medical schools find themselves concerned with the "borderline

*A paper read in Section A at the First World Conference on Medical Education, London, 1953.

†Senior matriculation may count as one of these premedical years.

applicant." In making selections from among such marginal candidates the selection committees find their wisdom taxed to the utmost.

Under present conditions from two-thirds to three-fourths of the places in a new class can be awarded on the basis of demonstrated ability as judged by the scholastic record, aptitude tests, personal references, and interviews. In the case of a student of very marked scholastic ability, this tends to outweigh nearly all other factors involved, including residence, financial resources, and outstanding achievements in extracurricular activities. This situation is not unique to Canada, as I feel sure most participants in the Conference will agree. However, most of us must be in agreement, also, that serious risks are involved in following this practice.

The Borderline Applicant

It is not my intention to devote time to the deliberations which are characteristic of a screening committee when it is dealing with applicants of superior, or even definitely acceptable, abilities. It is the borderline applicants who require the most study before selections are made. The situation is related to the restriction upon sizes of entering classes in the medical schools of Canada.

The borderline applicant falls into that category because, in the first place, he is likely to be undistinguished in his academic record. However, he would not be eligible for consideration at all were it not for some redeeming features about his scholastic record. Screening committees are at all times alert for inconsistencies in student transcripts which are presented to them. It is a danger signal when such a transcript reveals relatively good grades alternating with failures and make-up examinations. It is a responsibility of the selection committee to identify those applicants of real ability who may have made a mediocre start in the university for one reason or another, but who have redeemed their right to consideration by superior performance later on. Favourable consideration is more likely to be given in cases where there has been steady and noteworthy improvement over three or four years than in cases where scholarship has deteriorated after a promising beginning. Obviously the transcripts of individuals with almost completely opposite scholastic traits may be indistinguishable without detailed scrutiny. In Canadian medical schools it is not unusual to have 10% or more of an entering class made up of candidates who have been denied admission on one or more occasions, pending proof through additional university work that they possess the ability and motivation required to pursue the medical course.

Place of birth and legal residence are considered by all Canadian medical schools in their selection of entering

CONFIDENTIAL PERSONAL ASSESSMENT

Confidential

Assessment of:

By:

HOW TO USE THIS FORM:
1. Select ONE suitable description in each section.
2. Cross over it with an "X."
3. Write additional remarks in the spaces provided.

1. How long and in what connexion, have you known the applicant?

2. Some persons have distinct talents for leadership. They are expected to take the lead in any enterprise that may be started. At the other extreme are persons who are content to be followers and are never asked to head up any sort of project. In between are persons of varying leadership ability. Based on your observations and on hearsay, place an "X" over the appropriate rating for this individual.

Distinctly a follower	Active, but a follower	Average	Very often a leader	Outstanding as a leader	No opportunity to observe

REMARKS:

3. Some persons are independent and creative in their thinking. They have "ideas of their own"; they analyse and interpret, invent, write, propose ways of doing things. Others are not original in this fashion, but seek to know how things are done by others. Based on what you have seen or heard, indicate your assessment of this person.

Not original	Tends to depend on others	Original as most people	More original than average	Unusually original in thought	No opportunity to observe

REMARKS:

4. Some persons are quite generally pleasing to their fellows. This distinctly agreeable personality is welcome in all circles, is invited out, and has a large number of acquaintances. Others make an unfortunate impression on most people. The unpopular personality is frequently neglected, if not positively shunned. Estimate this person.

Impresses many unfavourably	Not as popular as most	Average popularity	Popularity above average	One of the best liked persons	No opportunity to observe

REMARKS:

5. Some people are able to speak engagingly and communicate ideas clearly and readily. At the other extreme are persons whose speech is halting and very ineffectual. In between are varying degrees of ability of expression. Consider the person you are assessing in comparison with others.

Speech defect or irritating manner	Below average	Does as well as most	Better than average	Outstanding	Very poor but normal speech

REMARKS:

6. Some persons arouse the greatest confidence in others and are regarded as trustworthy in any situation. At the other extreme is the unreliable person who is never depended upon. Rate this person from your own experience and from reputation.

Undependable	Often found undependable	As reliable as most	Reputation for dependability	Most highly respected	No opportunity to observe

REMARKS:

7. Some persons are highly co-operative and helpful. They go out of their way to be of service to others. At the other extreme are persons who are self-centred and who never volunteer their help to anyone. In between are those who are helpful under certain circumstances. Consider this person in comparison with others.

Extremely self-centred	Rarely gives aid freely	As helpful as the average	Helpful and co-operative	Generous to a fault	No opportunity to observe

REMARKS:

8. Please write additional comments below. You may wish to elaborate on your remarks in the above sections. You might like to comment on other personality traits or refer to some significant events in the life of this person. If there is not enough space, please add another sheet. All information that you give us will be dealt with confidentially.

....
Date *Signature*

students. Some of the faculties of medicine restrict admissions to native-born applicants. Privately endowed medical schools are more lenient in this matter than tax-supported institutions. In borderline cases the non-residents are usually eliminated.

Medical schools in Canada take into account the ages of applicants, being reluctant, or refusing completely, to accept into the final four years in medicine any individual who is less than 19 or more than 30 years old. Furthermore, screening committees are prone to postpone admission of bright young students who are immature in other respects than scholarship. This policy is followed in the conviction that an additional year or more of college or university will not only contribute substantially to the applicant's general education, but make him a more competent student when he is admitted to the medical course. Candidates over 30 years of age are usually rejected because, even if graduated in due course, they will have proportionately fewer years to devote to the practice of medicine.

Lack of emotional stability or some other personality disorder may be a determining factor in the rejection of a borderline applicant. Unfortunately the assessment of the personality pattern does not seem at present to enter as prominently as it should into the selection of students with outstanding scholastic records. Perhaps this is because of the lack of a dependable technique for making this sort of judgment. Screening committees are alert, however, to obtain clues which turn up in personal recommendations or are obtained from other sources. An effort is usually made to have a psychiatrist serve as a member of the screening committee.

Final choices from among borderline applicants depend a good deal upon interviews with the selection committee. Here a careful appraisal is made of the conditions under which these applicants have completed their premedical courses. Family background is inquired into, as well as financial resources and obligations. This latter is particularly important in our experience, because in recent years it has been quite apparent that the medical course should be a full-time occupation for any but the exceptional applicant.

Other situational and personal factors which it has been found helpful to discuss with borderline applicants include health and physical adequacy for the medical course, reading habits, the applicants' reasons for wishing to become physicians, and their intentions with regard to their medical careers if accepted into the school and graduated.

Personal Reference

I wish to devote my remaining time to a consideration of the possible value which may be obtained from personal references. As was stated by the Vice-President of this Conference, Dr. Victor Johnson, when he addressed the American Association for the Advancement of Science in 1944 on the "Requirements for Entry into Medical Schools," the broad objectives of any educational programme can be stated if we define the product which we seek to turn out. I endorse Dr. Johnson's elaboration of this statement to the effect that we are seeking to select and train future physicians who will be good citizens, equipped with the knowledge and skills required in the practice of modern scientific medicine. We are seeking individuals with intellectual curiosity who will be lifelong students and who, perchance, may make their individual contributions through original investigations. Finally, we wish to select as medical students young men and women who have, or will develop, a strong social consciousness.

In trying to devise some means for judging the potential or proved attributes of applicants to our medical school in British Columbia we have felt we would like to obtain all possible assistance from persons who know the candidate well. However, it has been our experience and that of others that ordinary requests for letters of recommendation do not bring forth the information desired. In order to explain what is wanted to these well-intentioned people and to be able to deal quantitatively with the information provided the accompanying questionary has been developed. Replies made to the first seven questions are graded as shown. An average numerical grade can then be given for the complete personal assessment. If these questionaries served no other purpose, they would be amply rewarding in our experience because of the critical comments usually forthcoming under Item 8.

In conclusion, I feel it should be stressed that the medical schools of Canada are deeply concerned to select entering medical students of integrity and intelligence who have mastered to a satisfactory degree the basic concepts in chemistry, physics, mathematics, and biology. These must continue to be the foundation stones upon which the study of medicine rests. Our objective, also, is to select students with the broadest liberal or general education it is possible to achieve in the time available. We, along with many others, are seeking for ways in which the principal educational values of the previous four-year premedical course can be condensed into a three-year programme. We are hopeful, although not entirely optimistic, that this may be accomplished through improvement in the quality of instruction and elimination of non-essentials from the curriculum of premedical students.

SELECTION OF STUDENTS IN AUSTRALIA*

BY

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The Melbourne Medical School, which I represent, is the sole Australian school limiting entry, and this practice has been in operation only for about ten years. Dr. Severinghaus has with great care outlined the present status of selection in one school in the United States, with particular reference to the value of the confidential report and personal interview. My object is to present another point of view.

In Melbourne there is general and strong opposition to limitation of entry, though we, like so many others, are compelled to practise it because of inadequate accommodation, staff, and facilities. Our opposition is based on the following points:

1. Limitation imposes too early an emphasis on the competitive aspects of academic life. This is undesirable because (*a*) it restricts the outlook and early training of the student; (*b*) good material often reacts unfavourably under this type of pressure; (*c*) it leads to premature and over-specialization during the early educational period.

2. There are no tests of infallible predictable value on which selection can safely be based. Regardless of the selection technique employed, some good students will be excluded and some very poor ones accepted. Injustices of this kind are inevitable and much good material may be lost as a consequence. There is the additional danger that attempts to justify the selection of any group may lead to a deterioration rather than to a strengthening of standards. Thus a high failure-rate among a "carefully" selected group must reflect on either the selection committee or the teaching or both. This is always a source of embarrassment, which, if not honestly and courageously faced, can be resolved only by adopting the attitude that, since both the selection and the teaching are above reproach, all students must pass; and it has even been suggested that under these conditions examinations are no longer necessary.

*A paper read in Section A at the First World Conference on Medical Education, London, 1953.

3. Mental development is not arrested in the late teens, and it is possible for individuals to rehabilitate themselves when they are transferred to a new environment. All do not mature at the same rate or at the same age. A child has little choice in the school to which he is sent, and often an unfavourable environment restricts his progress. Under the stimulating influence of new teachers in a university atmosphere some students reveal unexpected qualities.

At the turn of the century limitation of entry into medical schools had not appeared to harass students, embarrass selection committees, and complicate the administrative machinery of our universities. But the last half-century has seen great improvements in social conditions and rapid advances in medical knowledge. This, paradoxically, has introduced a need for more, rather than fewer, doctors. Furthermore, the object of enlightened educationists has been to create conditions in which all children who are fit for higher education will be permitted to proceed to a university if they so wish. The provision of scholarships and grants in increasing numbers has accelerated progress in this direction. Thus at the present time we have a situation in which: (1) the evidence shows a need for more well-trained doctors, particularly in young countries with expanding populations; and (2) students are presenting themselves in ever-increasing numbers who are fully qualified to proceed with university courses, wish to become doctors, and have been educated with that object in view.

Factors in Selection

It seems odd that the reaction to such a situation should be to embark, without protest, on a policy of selection for entry into medical schools. Why has it been found necessary to do this? Are we selecting because more of the applicants are of poorer quality than they were 50 years ago? If this is the case, then it reflects on those preparing the students presenting themselves for medical education, and action should be directed towards improvements at secondary school level so that the mediocre are filtered out. On the other hand, if we are selecting not because the standard is inferior but because the number of acceptable applicants greatly exceeds the number of places available, then surely the answer is to make more places available, and our energies should be directed to getting more medical schools instead of fewer students. In short, if our admission standards are satisfied at an intellectual level, then there should be sufficient places to accommodate those expressly desirous of embarking on a medical course.

It is necessary to be quite clear on these points, because some statements on this subject create the impression that the problem is one of deteriorating standards. Since, however, selection dominates our limited horizon and is the subject for this discussion, we should properly confine our remarks to it; but I thought it necessary that someone should raise a voice of protest at what, in terms of university traditions and principles, can be regarded only as a pernicious practice.

In general the basis of selection is examination results, rarely alone and more usually in combination with one or more of the following procedures: survey of confidential reports; interviews; intelligence and aptitude testing.

The determination of the applicant's fitness to study and to practise medicine is a very difficult matter. Very few of the factors involved are amenable to exact measurement. Though it has become fashionable to criticize examinations, they do provide the only objective test at our disposal, and in the past academic merit alone has been responsible for providing a body of medical men of whose achievements any age would be justly proud. The principal criticism against examinations is based on the wide variations in marking and grading systems in schools, and this makes a comparative evaluation of records difficult. Since selection, regardless of the method employed, is highly competitive, it is essential that, where possible, all prospective medical students applying to a particular medical school should be assessed on the results of a common examination. I appreciate that this is quite impossible in certain countries—for example, the United States—and would be difficult in others where large numbers of students are involved and where they are free to apply over the entire country at will. Despite the difficulties, however, further consideration should be given to the introduction of a method based on a common competitive examination. A possible solution would be to accommodate all matriculated students in a premedical year in medical schools based on a zoning system. The year would then be completed under identical conditions for each school, and at the termination of the course an examination could separate those who are to proceed from those who are to be excluded. But there are several facets to this problem, to which further reference will be made when I relate our own experiences in Melbourne.

Many selection committees attach great value to confidential reports on the school record of the applicant, but these may be misleading. We have already noted that any system of selection must be competitive. What, then, is the basis of comparison when the records of applicants from different schools are under review? Variation in the standards of reports is even greater than it is in the case of examinations. Some headmasters have that wonderful capacity for being good pickers of embryonic doctors, but it would be unfair to exclude by this method the capable and worthy student who is not fortunate enough to be the protégé of such a prophet but who attends a good school where salesmanship is not one of the headmaster's outstanding qualities.

The interview has its strong advocates also, but it is open to several objections:

1. The requirements necessary for conducting interviews are exacting. As Dr. Severinghaus has stated, the committee at his school "regard their job as the most important assignment in the medical school." The interview requires the services of a single committee composed predominantly of medical graduates, because these are presumed to be in a better position to judge those qualities which are most essential for medical work. They also call for a degree of experience, wisdom, and human understanding on the part of the interviewer which few possess. It is astonishing to see interviewers claiming powers with which they are not endowed. The interview must be conducted in an unhurried fashion, and, to be just and searching, must be a time-consuming undertaking. Each interview could hardly be conducted in less than twenty minutes. On a conservative estimate, 18 students at the most could be interviewed in a day and 90 in a week. With large numbers to interview—Dr. Severinghaus mentions 500 in his school—the selection committee would be fully employed for several months. How reliable are the conclusions of any committee working under such conditions and is the effort worth while? As a general principle, many of us believe that the medical personnel of medical schools should be called upon to do less and not more committee work. University staffs are already grossly overworked, and this new responsibility can only add to their burden and reduce still further the time available for reflection and research.

2. The stage has now been reached where students are being coached for interviews. This is a waste of the student's time and surely defeats the purpose of the interview.

3. Interviews are not used at any subsequent stage of the student's career, and it is therefore unfair to emphasize them when he is applying for entry to the course.

Many have still to be convinced of the value of intelligence and aptitude testing. These methods must still be regarded as in the experimental stage, and if undertaken should be employed solely with the object of collecting data and not with the actual process of selection itself. It is difficult to understand just how the prognostic value of these tests is to be determined. It would be a formidable task to undertake a large-scale assessment of the subsequent careers of thousands of doctors from graduation to death; and what is to be the yardstick by which we are to measure the quality of the end-product—academic record, contributions to original knowledge, social advancement, financial reward, or public recognition?

An Accepted Method

All of these factors have been carefully considered by the Melbourne School, which has decided to base selection solely on examination results at the end of a common premedical year. Though the university is the examining body for matriculation, it was decided not to select at this stage, because of variations in the standard of teaching in the different schools and because not all students take the same subjects.

All intending medical students who have matriculated are accepted into a premedical year, where they attend courses in physics, chemistry, biology, and scientific method. The bias in these courses is to medicine. This results in some overcrowding, but it is considered preferable to give all prospective medical students a chance to compete under essentially the same conditions. Written and practical examinations are conducted at the end of the year, and those passing at the first attempt are arranged in order of merit. The number of available places in the quota fixes a line on the list—those above continue with the medical course, while those below may repeat the year and attempt for a place on the list which will carry them into the quota.

Special consideration has been given to those who fail in the examination. Normally such students may repeat the premedical year once, but priority on the merit list is given to those passing at their first attempt. The quota is such that students who are successful only at their second attempt go to the bottom of the list, and for this reason their chances of being selected are remote. They are therefore ill-advised to gamble on another year. However, there are two categories in the failed group who are given special consideration: (1) The student who misses at the first attempt because of extenuating circumstances—for example, severe and prolonged illness. All the failed students are interviewed in order to isolate this group. If exceptional circumstances can be advanced to account for their failure, they are allowed to repeat the premedical year with all the privileges of one making his first attempt. (2) Students who at the second attempt gain marks equivalent to first- or second-class honours are considered to have rehabilitated themselves and are graded as having sat for the first time. In this way, we feel that justice is done to all and that competition for the available places is scrupulously fair.

Admittedly the position in Melbourne is less complicated than in most other places where the quota system prevails. But, though the problem may be simpler, it is nevertheless one of great concern to the administration. The general feeling is that the sooner limitation can be abandoned the better, but this is a question which must ultimately be decided by governments. We also believe that the examination system, carefully applied, should still provide the fundamental basis for selection.

We fully recognize the value and importance of character, integrity, sincerity, and so on; but these qualities are difficult to assess, and how many have matured in this direction at the age of 17 or 18? Furthermore, success in examinations does test something besides academic competence; it reveals qualities such as application, industry, interest, and perseverance. In the final analysis we have decided in favour of examinations. All other techniques are considered to be too unreliable to be tolerated in our democratic community.

The social structure, traditions, customs, and practices of different countries present such great differences that no single formula can be acceptable to all. Discussions of this nature and an exchange of views at an international level are, however, of the greatest value. It is only by learning of the problems of others and the methods that have been adopted to resolve them that we can more easily discover a possible solution of our own difficulties. We are also prevented from becoming complacent about the greatest problem in medical education to-day—how to obtain the very best material to continue and extend the great traditions of our profession.

SELECTION OF STUDENTS IN INDIA*

BY

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There has been a rapid increase in the number of medical colleges in India in the last six years. At present there are 29 undergraduate medical colleges in post-partition India, as compared with 16 in the undivided India of 1947, and it is planned to add four or five more in the near future. This great increase has become necessary because the number of qualified medical men has been, and is, so small for the total population of the country, which reaches nearly 340 millions. For comparison, one may note that in the United States there are 76 medical colleges for a population of 160 millions, and over 20 medical colleges in Great Britain for a population of 50 millions.

Minimum Qualifications

As the result of a nation-wide inquiry into the selection of medical students in India I find that methods vary throughout the country. The minimum qualifications are intermediate examination (taken two years after matriculation or school-leaving examination), with physics, chemistry, zoology, and botany as compulsory subjects. About 10% of entrants have the B.Sc. degree. The minimum age for admission is 17 years.

At a number of centres—for example, Lucknow—all students must appear at a premedical examination (written), when they have to answer four question papers—one each in chemistry, physics, zoology, and botany. At Lucknow usually 1,100 to 1,200 students of both sexes sit for the examination each year. Of these the top 100 boys and 25 girls are asked to return for interview. The interviewing board consists of a chairman and two members together with the hospital radiologist. The latter examines the applicants under the screen and sends a report to the chairman, who, along with the other members, examines them physically and asks a number of questions of general interest, to get a rough idea of the mental make-up of the candidates. No attempt is made otherwise to assess the aptitude of the student for the profession of medicine.

In the majority of institutions no premedical test is held. Students possessing the necessary qualifications are asked to apply for admission. In their applications they are required to state the marks obtained by them in the various examinations, and selection is made on scholastic merit. After selection the candidate is usually interviewed by a board, when a few general questions are asked, but this interview is regarded as of secondary importance.

A small number of places, usually 5 to 10%, are reserved for the so-called backward classes and for candidates from outside the country—for example, those from Nepal and Indians living in such countries as Africa or Fiji.

The survey also showed that about 2,000 students are admitted every year for a five-year undergraduate course. (To these may also be added another 500 to 600 students who are admitted for a "condensed course" for the M.B., B.S. degree. This is intended for "licentiates" who had previously attended a four-year course and were practising as registered medical practitioners.) Not more than 30 to 40% of these students qualify in the minimum five-year period; another 30 to 40% take five and a half years to graduate; and the remaining 20%, six years or longer.

There are about 50,000 qualified doctors in India, giving a ratio of 1 to 7,000 of the population. Even with the increased number of medical colleges and the consequent increase in admissions, we do not expect to have more than 2,000 newly qualified medical men a year—a totally inade-

*A paper read in Section A at the First World Conference on Medical Education, London, 1953.

quate number for our population. This contrasts with 6,082 graduations during 1952 in the United States, whose population is half that of ours.

One of India's imperative national needs is for a much larger number of qualified medical men, but owing to financial stringency we cannot afford to increase the number of medical colleges for many years to come. Many more students would like to take up the career of medicine, as is shown by the number who apply for admission. At Lucknow, for 125 vacancies, we have 1,100 to 1,200 applicants, so that less than 10% of applicants can be admitted. More or less the same figures can be quoted for other medical colleges.

Faults in Present Methods

It is the opinion of many of us (and I have discussed this subject with many colleagues at my own college as well as from other institutions all over India, and also with a number of students) that our present method of selection is unsatisfactory. By depending almost entirely on their scholastic achievements, or rather on their capacity to do well in certain written tests, we find that a number of unsuitable students gain admission, thus excluding others who might have been better fitted temperamentally for the arduous duties of a medical man. The very high failure rates in the examinations are another source of anxiety to us. There are many causes for this, but an important one appears to be that by our present method of selection we get many entrants who are temperamentally unfitted to be medical students, even though they have done well in the competitive premedical test.

We feel that, in addition to a written test, there should be some sort of psychological screening, including aptitude tests, which would enable us to obtain better material. Various psychological methods are being devised and practised in certain teaching institutions in Britain and America, and it would be of interest to us to know about these methods and whether their use has led to the selection of better student material.

Finally, many of us feel that an age of admission of 17 years is too low, and that this should be raised to 18 or 19. This will enable students to put in at least one year at the university and make them more mature. It is also felt that the present premedical education is too narrow and that greater stress should be laid on students being given a more liberal education.

SELECTION OF STUDENTS IN THE PHILIPPINES*

BY

MANUEL D. PEÑAS

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If we were to state the aims or objectives of undergraduate medical education it would give us a pretty fair picture of the type of student that is best qualified to undertake the study. In simplest terms, undergraduate medical education is designed to establish within the medical student a formidable or solid foundation for his future development. It is not the purpose of undergraduate medical education to present the complete, systematic, detailed body of knowledge in every discipline. What is important is to stress the acquisition of fundamental principals which the student may employ in his approach to every subject or to the entire sum of medical knowledge. It must also promote the development in the student of the capacity for the logical assessment of facts and problems coupled with the ability to secure critical judgment based upon evidence and experience. He must further be able to apply these basic principles and critical judgment to actual problems he may meet in health and in disease. It is also desirable that during this phase of his professional training the student should be encouraged to develop an appreciation and a desire for continued medical education—realizing that graduation merely brings to a close that phase in which he is taught how to study effectively.

The implementation of these objectives is usually guaranteed by: (1) giving the student, not an encyclopaedic mass of material, but the requisite basis of professional knowledge; (2) helping him develop habits promoting a sound critical attitude, with love for method, thoroughness, and accuracy; (3) helping him develop technical skills in the clinics and laboratory, with the capacity to correlate and integrate the information that he may gather; and (4) helping him develop understanding of his surroundings, professional and ethical principles, and a sympathetic comprehension of the doctor–patient relationship.

The Prospective Student

What type of student, then, shall be admitted to the formal study of medicine? What soil must be selected to nurture these seeds of medical education? During these last few days we have been privileged to hear distinguished colleagues from many countries describe and expound the qualities that should be looked for in a prospective entrant into a medical college.

The consensus of opinion to which we personally subscribe is that:

1. He should have a clear idea of what he is after; he must, in other words, have a clear objective in his mind that will guide him in his days as an undergraduate, a house officer, and finally as a practitioner. Needless to say, his motives must be proper.

2. He must be broadly educated in the humanities, with a better regard and preference for human biology probably than for the biology of lower animal life.

3. He must be cultured, naturally with an appreciation of language and literature, with insight and understanding, with a logical trend of mind, and at the same time fired with enthusiasm to serve the individual, family, and country.

4. At the same time he should be thoroughly drilled in the principles of science as a necessary prerequisite for the comprehension of the medical sciences. In other words, he must have a "hard core" of scientific knowledge for the understanding of the more technical subjects in the medical curriculum. We must caution him, however, and urge him to be more familiar with the place and role of these scientific subjects in his education and to avoid becoming a mere repository of a mass—or mess—of unrelated details.

5. He not only should take pains to develop his personality, but must also be imbued with a high sense of duty, love of work and responsibility. Great emphasis should also be placed upon his emotional stability.

Some of these qualities are measurable, others are not. It is really with sympathy and understanding that we should view the problems and great responsibility of selection boards of screening committees. It is true that the academic records of the student, coupled with aptitude testing and favourable personality quotients obtained at interviews, will fill the greater part of the available places in the medical schools. But the real problem lies, as emphasized by Dr. Weaver, in the "borderline cases." It becomes most taxing to undertake the great responsibility of assessing their capabilities. There is really great danger that a student with real potentialities which are as yet undeveloped may be

*A paper read in Section A at the First World Conference on Medical Education, London, 1953.

excluded, and, on the other hand, a misfit be granted admission. From the point of view of screening committees, here is where a calculated risk may have to be taken. If, however, this is always kept in mind and we employ collateral guides such as confidential personality assessments and the like, the margin of error may well be reduced.

There are a few other points that I should like to touch upon very briefly. I am sure it is almost superfluous to state that the applicant should have an unblemished regard for ethics and morality, which we consider to be basic behaviour qualities that will guide him in his professional career.

We must give a thought to those with minor physical defect. In exceptional cases this alone should not be a bar to admission to a medical school. It is a common observation that they turn out to be more dedicated to their work, are dependable, and often are more likely to contribute something to the fund of medical knowledge.

The question of age is important, and we believe that medicine demands maturity in approach. For this reason, in my country we have recently added an extra year to the premedical course. The more important reason for this, however, is to increase the number of hours in the humanities.

Language Difficulties

There are about 7,000 islands in the Philippines. Although not all of these are inhabited, sufficient geographical separation led to the development of numerous dialects. It became expedient, therefore, to employ English as the medium of instruction. While the majority of medical students obtain an adequate command of the English language, so as to utilize with advantage the excellent textbooks, journals, and other publications in this language, it is understandable that some difficulties may creep in at the classroom level. The shades, nuances, and innuendoes sometimes necessary to drive home a point run the risk of being altogether lost. The professor therefore must be careful to transmit his thoughts clearly. It is very fortifying to hear, in our first morning session, an English student, in describing his experience with foreign languages, confess that he sometimes does not understand his own professor discussing in his own language. I am informed that similar situations obtain in other countries.

Finally, I wonder if it would not be an advantage to drop the term "premedical" when referring to the courses necessary as a preliminary to the formal study of medicine. Admission to premedical courses and subsequent rejection by the medical school produce a certain degree of psychic trauma to the student and his family—in other words, a loss of face. A general science course which will permit the rejected student to follow an alternative profession will, we believe, prevent this. We have no doubt that if this introductory course is well organized it will prepare the student not only for medicine but for other callings as well. If we then call this course by another name than "premedical" rejection will lose some of its sting.

We have four medical schools in Manila and we are interested in all phases of medical education. The University of Santo Tomas, which I represent, is particularly interested in this problem of student selection. There is no doubt that the collective opinion set down in this First World Conference on Medical Education will go far towards establishing the basic tenets of efficient medical instruction.

PHYSIQUE AND PERFORMANCE: HONOURS CLASS AT OXFORD

BY

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"Our minds are perpetually . . . wrought on by the temperament of our bodies."—JOHN DRYDEN, 1631–1700.

In 1953 I described the relationship found to exist between physical characteristics and students' choice of faculty at the university (Parnell, 1953a). Final examination results are now available for men whose Sheldonian somatotype had been determined in course of the pilot health survey at the Institute of Social Medicine from 1948 to 1951, and who have since graduated. The results are reported both for their general interest and because they may be found to contribute not only towards improved assessment of personality but also to prediction of performance.

The Sample

The somatotype sample of 321 constitutes 78.2% of the men who joined the student health service, and for whom a first-, second-, or third-class honours result is known. Eleven with fourth-class honours, seven with passes, two who failed, and various others who for one reason or another did not complete the examination are excluded from the analysis on the ground that their numbers were small. Comparison of the distribution of honours-class results for the somatotyped sample with the results of all attenders at the health service showed no significant difference—in fact, hardly any difference at all. How far those volunteering for the health service are representative of the two men's colleges concerned is less easy to answer categorically, because over the five years of the survey only 65% of the freshmen coming into residence volunteered. In examination results, however, health service attenders did slightly better than the two colleges as a whole (see Table I): they had 3.7% more first-classes, 5% fewer thirds, and incidentally fewer fourths and passes. This raised the question whether athletes might have attended less often than, say, less athletic scholars. Tanner (1952) checked this possibility, and reported that athletes came to be somatotyped quite as often as others. So far as can be ascertained from these two checks of academic and athletic ability, there is no significant bias in the present sample. Although it is neither a complete nor a random

TABLE I.—*Honours-class Results among Scholars and Commoners who had been Somatotyped*

	Firsts		Seconds		Thirds		Total	
	No.	%	No.	%	No.	%	No.	%
Scholars	33	34·4	57	59·3	6	6·3	96	100·0
Commoners ..	22	9·8	131	58·2	72	32·0	225	100·0
Total somatotyped	55	17·1	188	58·6	78	24·3	321	100·0
Total at the two colleges, 1949–53	103	13·4	435	57·2	223	29·3	761	99·9
Whole university, 1951 and 1952 ..	271	8·9	1,695	55·5	1,089	35·6	3,055	100·0

Note.—The following were excluded from the analysis on the ground that the samples were small: 11 men with fourth-class honours, 7 with passes, 2 failures, 6 who went down for one reason or another, 3 who were ill, and 4 who died. The remainder attending the health service were postgraduates, with the exception of a few medical students who in the post-war period did not take an honours degree.

sample it is the best available, and does not appear unrepresentative of the two colleges, at least with regard to the main characteristics considered here. Within the university as a whole the two colleges—Magdalen and Wadham—had outstandingly good results.

Note on Somatotype Methods

Sheldon *et al.* (1940) first described his photoscopic method of rating physique by inspection of standard photographs, and at the same time provided tables for assessing somatotypes in terms of his three components, endomorphy, mesomorphy, and ectomorphy, from seventeen photographic measurements. His photometric method has fallen into disuse on account of the labour involved and because, in his hands, photoscopic estimates which are quick proved sufficiently reliable. Unfortunately for many investigators, especially those possessing no adequate reference file of known somatotypes, photoscopic ratings have proved unsatisfyingly subjective.

Standard Deviation Chart.—The need for an objective method, and furthermore one simple enough to employ in clinical practice, is met now by the standard deviation chart, on which actual measurements are ringed and the profile so formed of height, weight, bone and muscle girth, and fat measurements can be interpreted promptly; in fact, the profile may be sight-read very much in the same way as an electrocardiograph record may be during a clinical interview. The deviation chart itself was given and its use outlined by me (Parnell, 1953b). Fuller details concerning interpretation, together with tables for the objective assessment of dominance, are now available (Parnell, 1954). It suffices here to say that the somatotype estimates used for the present report were derived from opinions based on three separate methods: first, photoscopic; secondly, photometric; and, thirdly, from deviation chart profile and tables. Furthermore, a large proportion had been rated independently by expert somatotypists, whose close agreement was reported by Tanner (1952). Disagreement between expert photoscopic somatotyping and the deviation chart and table estimates does not exceed a half unit in more than 10% of individual component ratings. The deviation chart and tables are a good guarantee of internal consistency, but the photoscopic estimates very occasionally drew attention to dysplasia, which led to revision of the overall estimate employed for the present report.

Somatotype Categories

The somatotype categories to be employed are best appreciated by examining Sheldon's somatotype chart. On this chart are six main sectors dividing physique by dominance in the three components, endomorphy, mesomorphy, and ectomorphy. Endomorphs, with their dominant capacity to put on fat, are plotted in the two sectors lying to the south-west, the more westerly sector including those whose muscularity exceeds their linearity of physique, the more southerly sector those who are more linear than muscular. Mesomorphs, with their dominant bone and muscle development, are plotted in the two northern sectors; ectomorphs, whose physique is linear or light weight for their height, in the south-eastern sectors. Like much technical jargon, the terms for subsectors relating to secondary dominance are clumsy, though not now easily avoided, since they were introduced as long ago as 1940 and have measurable meaning.

Mesomorphs are divided into endomorphic and ectomorphic mesomorphs, depending on whether the first numeral describing endomorphy exceeds the third numeral of the three-figure index which describes ectomorphy. Similarly, ectomorphs are subdivided into mesomorphic and endomorphic groups according to their secondary dominance. Further subcategories are introduced here, each of the six sectors so far described being divided into central and peripheral portions. The central area as a whole contains the more evenly balanced physiques with mid-range body proportions; and the six central subsectors, as well as somatotype 444, which occupies the central position, are described concisely by their main individual somatotypes. For example, sector C. 354 describes central ectomorphic mesomorphs. Somatotypes with shared primary dominance (e.g. 344) and shared secondary dominance (e.g., 343) lie along lines dividing the six main sectors. In the analysis they are grouped serially with the main sectors, the group as a whole being denoted by a combined symbol (e.g., C. 354–344). The same concise expression is employed for types with the same dominances lying more peripherally, but is prefixed by a capital P. It is perhaps illogical to refer to P. 354, since 354 itself is a central somatotype, but it is not likely to be misunderstood, and has the advantage of reducing the number of terms to be grasped at the outset. The last of these are endopenia, mesopenia, and ectopenia, which are on occasion used to describe sectors where the respective component has a lower than average rating—for example, the endopenic sectors are C.P. 354 and 345, mesopenic sectors C.P. 534 and 435.

Findings

I have commented elsewhere (Parnell, 1952) that when the somatotype distribution of Oxford undergraduates is compared with that of American students it becomes clear that certain physical types do not reach Oxford, although they enjoy university education in the States. The absent somatotypes included on the one hand extreme mesomorphs, men with proportionately large bone and muscle development; and on the other hand those extreme ectomorphic endomorphs whose bodies contain a high proportion of fat and comparatively little musculature. The tendency at Oxford towards central somatotypes with more evenly balanced physiques may be followed further by comparing the incidence of individual types at Oxford with that found by Sheldon in America (see Table II).

TABLE II.—*Incidence of the Commoner Somatotypes at Oxford Compared with that of University Students in the United States*

Somatotype	Oxford N=405	Incidence per 1,000 Students	
		U.S.A.	Oxford
Ectomorphic			
225	12	20	30
244	10	42	25
235	17	45	42
325	9	21	22
335	14	30	35
Total		158	154
Central			
334	47	50	116
345	10	8	25
344	35	58	87
343	56	47	138
453	5	10	12
443	19	56	47
433	18	24	44
434	14	35	35
Total		288	504
Ectopenic			
353	7	49	17
442	19	29	47
452	6	23	15
451	2	3	5
541	2	3	5
542	6	14	15
532	7	18	17
Total		139	121

From Table II it may be seen that there are 504 central somatotypes per 1,000 Oxford undergraduates, compared with only 288 per 1,000 in the States, and the difference is accounted for mainly by the relative preponderance of types 343, 344, and 334 at Oxford. The explanation of this centralizing tendency is thought to be associated with severity of selection, for the proportion of young men receiving university education in the States is about ten times as high as in the United Kingdom, where, in any case, only a much more limited proportion reach Oxford or Cambridge. Tanner (1952) has also reported Sheldon's comment that the distribution at Harvard resembles that at Oxford more closely.

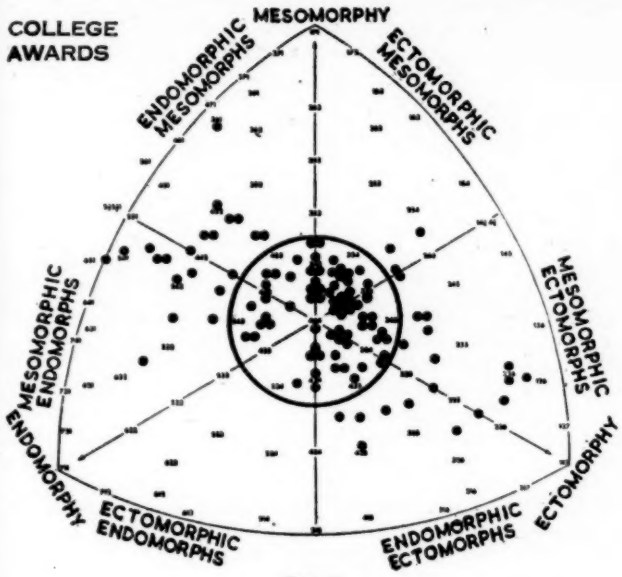

FIG. 1

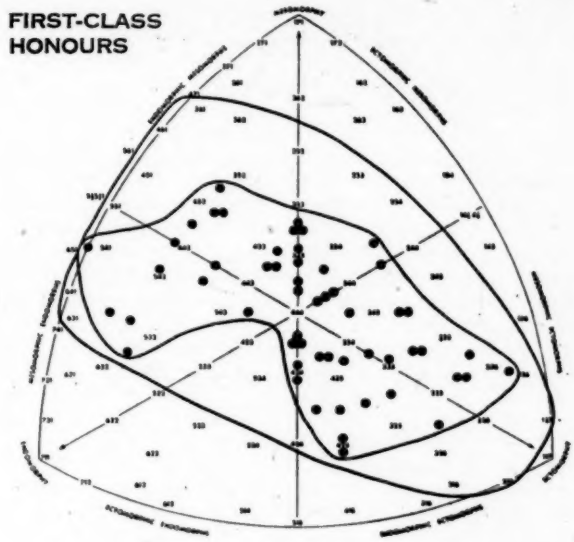

FIG. 2

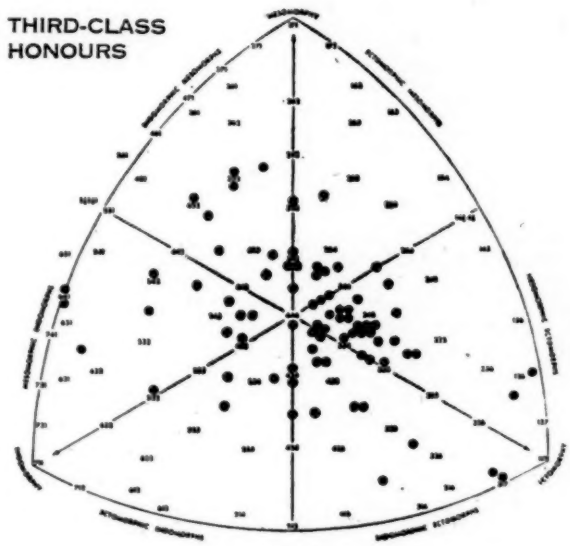

FIG. 3

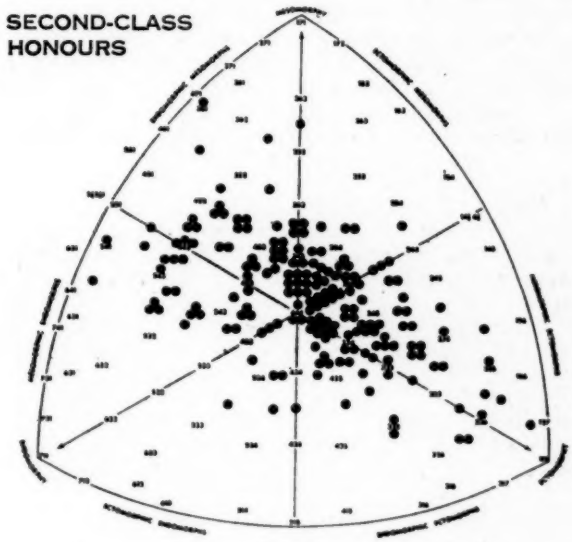

FIG. 4

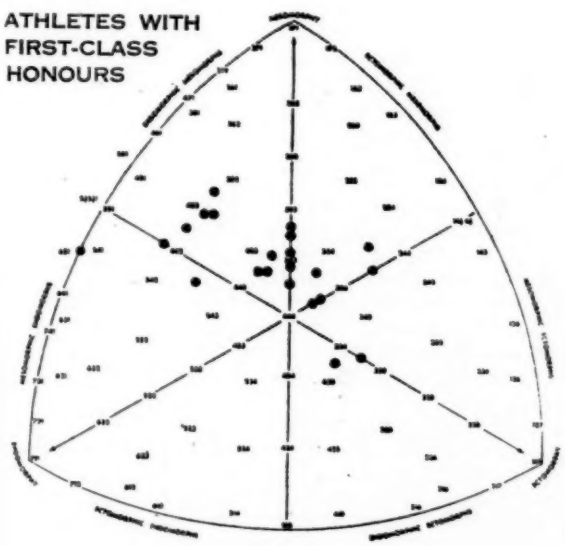

FIG. 5

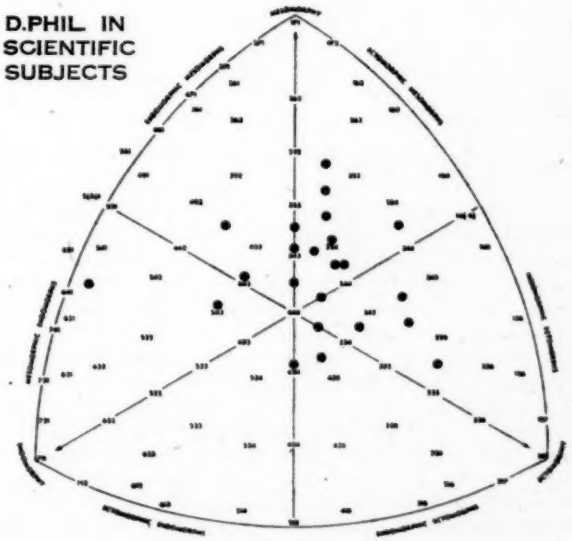

FIG. 6

Schematic two-dimensional projections of the theoretical spatial relationships among the known somatotypes.

This view that a higher degree of academic selection is associated with more central somatotypes is further supported by examination of those obtaining college awards (see Fig. 1). Among central somatotypes, 31.5% of 219 men were awarded college scholarships or exhibitions, in contrast to only 20.7% of 203 men with peripheral somatotypes, and the difference is significant (Diff.÷S.E. Diff.= 2.58). Looking at the distribution in Fig. 1, the impression is gained that academic selection is accompanied by physical selection of somatotypes lying close to the line where endomorphy and mesomorphy are held in balance, as though a purse-string were being tightened in an oblong purse the long axis of which stretches from somatotype 551 to 117. A similar tendency is also seen in the distribution of men with first-class honours.

The Somatotype Distribution of Men with First-class Honours

Fig. 2 illustrates the somatotype distribution of men obtaining first-class honours. A contour line has been drawn around the limits of this distribution, and may be compared with that lying beyond, which outlines the limits of the full distribution. It has already been mentioned that the first-class men are confined to a narrower zone of somatotypes with more evenly balanced body proportions, but when the proportion of firsts obtained is examined as a next step by dominance of somatotype, as well as by their central or peripheral position, some remarkable trends are witnessed (see Table III). Most notable is the performance of 43

TABLE III.—*The Distribution of Honours-class Results According to Somatotype Dominance*

Dominance	Numbers				Percentages			
	First	Second	Third	Total	First	Second	Third	
C. 543, 443 ..	1	8	4	13	7·7	61·5	30·8	100·0
C. 453, 343 ..	10	27	6	43	23·3	62·8	13·9	100·0
C. 354, 344 ..	4	25	7	36	11·1	69·5	19·5	100·1
C. 345, 334 ..	2	26	19	47	4·3	55·3	40·5	100·1
C. 435, 434 ..	8	7	5	20	40·0	35·0	25·0	100·0
C. 534, 433 ..	0	6	2	8	0·0	75·0	25·0	100·0
Total central ..	25	99	43	167	15·0	59·3	25·7	100·0
P. 543, 443 ..	8	20	6	34	23·5	58·8	17·6	99·9
P. 453, 343 ..	4	19	7	30	13·3	63·3	23·3	99·9
P. 354, 344 ..	2	7	2	11	18·2	63·6	18·2	100·0
P. 345 334 ..	9	29	9	47	19·2	61·7	19·2	100·1
P. 435, 434 ..	7	8	8	23	30·4	34·8	34·8	100·0
P. 534, 433 ..	0	2	3	5	0·0	40·0	60·0	100·0
Total peripheral	30	85	35	150	20·0	56·7	23·3	100·0
543, 443 ..	9	28	10	47	19·2	59·6	21·3	100·1
453, 343 ..	14	46	13	73	19·2	63·0	17·8	100·0
354, 344 ..	6	32	9	47	12·8	68·1	19·2	100·1
345, 334 ..	11	55	28	94	11·7	58·6	29·8	100·1
435, 434 ..	15	15	13	43	34·9	34·9	30·2	100·0
534, 433 ..	0	8	5	13	0·0	61·6	38·5	100·1
444 ..	0	3	1	4	0·0	75·0	25·0	100·0
All types ..	55	187	79	321	17·1	58·3	23·6	100·0

endomorphic ectomorphs, of whom 34.9% obtained first-class honours. This is significantly better than the 15% of firsts among all other types; and it compares well with that of all scholars, of whom 34.4% obtained firsts. The 20 central endomorphic ectomorphs, of whom 40% got firsts, actually did better than 23 peripheral ones with 30.4%.

It is evident that somatotype dominance may assist or detract from final performance, but, to determine its importance more exactly in relation to awards on entering the university, Table IV was prepared. This gives the number and percentage of awards to men with each somatotype dominance. Only 34.9% of endomorphic ectomorphs received awards on entry, which is little more than the proportion in the whole sample (29.9%). Yet, as mentioned above, the group as a whole, including commoners, achieved as many first-class honours as all scholars by themselves, and of the 15 scholars with this particular dominance it may be seen from Table IV that as many as 12 (80%) achieved first-class results—an extraordinarily high proportion.

TABLE IV.—*Proportion of Awards and Percentage Distribution of Final Examination Results among Men Receiving Awards, According to Somatotype Dominance*

Sector	Total No.	No. Awards	Percentage with Awards	Percentage of Scholars and Exhibitioners with		
				First Class	Second Class	Third Class
543–443	47	18	38·3	27·8	66·6	5·6
453–343	73	18	24·7	44·4	50·0	5·6
354–344	47	22	46·8	18·2	77·3	4·5
345–334	94	21	22·4	19·1	76·2	4·8
435–434	43	15	34·9	80·0	13·3	6·7
534–433	13	1	7·7	0·0	0·0	(100·0)
444	4	1	(25·0)	(0·0)	(100·0)	(0·0)
All types ..	321	96	29·9	34·4	59·3	6·3

The next highest level of achievement was shared by peripheral mesomorphic endomorphs (23.5% firsts) and central endomorphic mesomorphs (23.3%). The latter with "north-west central physique," as I have called it elsewhere (Parnell, 1953b), were actually leading in academic eminence halfway through the survey, but young men of similar build in the last two years have not maintained the higher level set at the start. On entering the university, men with this dominance received fewer awards than might have been expected.

The lowest frequency of firsts was found among ectomorphic endomorphs; but this should be treated with reservation, because the sample of 13 is very small. Still, it is worth recording that in a more recent study of men showing symptoms or signs of a breakdown in mental health this somatotype dominance is comparatively common.

The chief and significant example of poor performance, or more exactly of infrequent high-level performance, is in central sector 345–334. In this "eastern central" zone only 4.3% of 47 men obtained firsts; and even if men in the central sector 354–344 are added—the sector which incidentally received much the highest proportion of awards on entry—there is still only a small number, 6 out of 83 (7.2%) with first-class honours. The chief physical characteristics of this combined "north-eastern central" zone are more than average bone and muscle development, more than average linearity of build, but less than average fat.

Distribution of Men with Third-class Honours

The highest proportion of men with third-class honours is found where the proportion of first-class men is lowest (see Fig. 3). It was actually highest among ectomorphic endomorphs, where the small sample of 13, as already mentioned, makes some reservation necessary; but it is equally true of the next highest level, 40.5%, which was found in the "eastern central" zone (sector 345–334), where only 4.3% obtained firsts.

Third-class honours were least often found among mesomorphs—in fact, only 18.3% of 120 central and peripheral mesomorphs together gained third-class honours. This difference in the proportion of thirds obtained by mesomorphs and by "eastern central" somatotypes is significant, but it is only the central mesomorphic ectomorphs who so frequently obtain thirds; the peripheral ones did better. Their better performance may be partly due to their greater relative dominance of mesomorphy over endomorphy, and in this connexion it is noticeable that where this relative dominance is reversed, as it is in peripheral endomorphic ectomorphs, a high proportion of thirds was found.

Apart from these subgroups, ectomorphs as a whole gained a high proportion of thirds. This confirms the findings of Sheldon and Stevens (1942), who reported that in achievement "the university ectomorph seems to enjoy the widest range of possibilities, both for better and for worse." They found that under the protection of the academic sanctuary the ectomorph had a 30% chance of being distinguished, and at the other end of the scale he frequently failed to adapt himself. In the present sample the exceptionally high level of achievement of endomorphic

ectomorphs has already been described, but it would be going too far to insist on the similarity between poor adaptation and third-class honours.

The "eastern central" group (C. 345–334) did, however, receive almost a full share of college awards on entry, 13 out of 47 (27.7%), compared with 29.9% in the complete examination series; and the question arises why the subsequent performance of men with this body build was comparatively disappointing, and why they, with 40.5% of thirds, did less well in finals than commoners as a whole, of whom only 32% were placed in the third class (see Table I). Were they "over-taught" at school and subsequently unable to apply or direct their energies effectively in the greater freedom of the university? Are they very late maturing? Do they have to wait for the late twenties or even thirties for their lower-than-average endomorphy to blossom and bestow a more comfortable outlook, restrain impulsiveness, and bring success? Did selectors in fact knowingly select for qualities other than examination success, or did the bright and eager appearance of these candidates hoodwink their selectors at interview? There is some evidence to come that ectomorph-mesomorphs are specially inclined to take up research: were research workers selecting, as many selectors do, in their own image? Yet another possibility is that caution and incapacity for free self-expression, both qualities found frequently in persons of this build, handicapped the candidate in examination controlled by a set time limit.

Second-class Honours

The next step is to examine the distribution of those obtaining second-class honours. This is the largest single class. Out of a possible total of 120 mesomorphs there were 78 (65%) with second-class honours (see Fig. 4). This proportion exceeds that among 201 other somatotypes, of whom only 54.2% were placed in the second class, and the difference approaches significance (Diff.÷S.E. Diff.=1.93). Compared with 56 mesopenes, of whom only 41.1% obtained seconds, the difference is significant (Diff.÷S.E. Diff.=3.03). It may be remembered too that mesomorphs contributed a fair proportion of first-class results. Furthermore, mesomorphs provided the lowest proportion of thirds, in contrast to mesopenes, who had the highest proportion of thirds (18 out of 56=32.2%). Thus it will be appreciated that, although mesomorphs did not reach the highest examination level most frequently, they did achieve a first-class about as often as would be expected in the sample as a whole; they obtained the highest proportion of second-class honours, and a further item of special interest to selectors is that they least often obtained a third; in short, their performance was comparatively seldom disappointing.

All-round Achievement

While discussing mesomorphs it is appropriate to mention that they take part in strenuous games and field sports much more often than mesopenes, whose physique with its less than average bone and muscle development is comparatively poorly adapted for strenuous exercise. In fact, 54.2% of mesomorphs regularly took strenuous outdoor exercise in the form of Rugby or Association football, hockey, cross-country running, or cycling, in contrast to only 21.6% of mesopenes. And one should add that almost all the mesopenes who did take part had central somatotypes. There was only one peripheral mesopene; he played hockey, but it is not known whether he was any good at the game. A point of greater general interest, however, is illustrated in Fig. 5, in which 22 men are plotted who not only took part in strenuous outdoor activities but also achieved a first-class degree. When compared with the full distribution of first-class men in Fig. 1 it will be seen that all but two ectomorphic firsts, and they are central ones, have gone; the group is mainly concentrated just to the muscular side of the mid-point of the distribution. This enables the reader to recognize the all-round character, literally through physical measurement, as a man at or just on the muscular side of the distribution centre, a man whose near-central physique is also likely to be associated with a balanced temperament. Cecil Rhodes rated toughness and leadership high among the qualities to be looked for in his scholars, but his was not the first reference to the educationists' ideal of all-round performance.

Doctors of Philosophy

Fig. 6 shows the somatotype distribution of 23 men studying for or having taken their D.Phil. degree in a scientific subject. It is in general necessary that a first- or good second-class honours degree is required before proceeding, and the two- to four-year D.Phil. course entails some original line of research as the basis for a written thesis. There were 12 ectomorphic mesomorphs—more than twice as many as might have been expected from the general distribution—and the manner in which scientific D.Phil. somatotypes tend to cluster in the two endopenic sectors may possibly bear witness to the combination of certain temperamental traits needed in scientific research—enthusiasm, precision, meticulous care, tenacity, critical aptitude, and persistence in pursuit of ideas. It is not suggested that these qualities are found exclusively in persons of this one physique, but it is possible that the particular combination of traits may be present most often in association with this particular range of physical characteristics. The smallness of the sample makes any definite conclusion questionable, but its inclusion here serves as a reminder that research, in itself an important university function, may demand qualities other than the ability to pass examinations. Indeed, there is more than a suggestion of contrast in the physical, and probably too the temperamental, traits demanded for success in research and in examinations, because it will be remembered that "north-eastern central" types as a whole had poor examination results.

The Question of Selection

It is hardly necessary to stress that the selection of students for university education badly needs improvement. The problem is well recognized and officially described in "Choosing University Students," a pamphlet published by P.E.P. (Political and Economic Planning). This pamphlet draws attention, first, to the large increase in the number of university candidates to be expected in the next 10 years, resulting from the increased birth rate from 1944 to 1948; secondly, to the high proportion, close on 70%, of students already in receipt of grants from public funds; and, thirdly, to the extraordinary unreliability of current methods of selection in predicting university performance from entry examination, headmasters' reports, and interviews. If parents and the general public are to be assured, first, that the money is well spent, and, secondly, that awards really go to the best students, then there is compelling urgency in the situation. There are as yet no signs that intelligence or other psychological tests are likely to produce a single-handed answer—in fact, Sir Frederic Bartlett (1953) reported that in the case of medical students the predictive capacity of intelligence tests, with the possible exception of excluding a few of the least intelligent, could add nothing to existing methods of selection based on school records and interviews.

Now, both examination and psychological tests concentrate on the mind to the exclusion of physical attributes, although it is to the body that all aspects of personality are inseparably anchored. Difficulty in interpreting physical characteristics has led in the past to these obvious and measurable features being ignored. Thus all attention has become concentrated on a bodiless abstraction, the mind. And this singular mental habit has now brought us to the present dilemma which P.E.P. (1953) summarizes in the following words: "The chief difficulty is that of devising tests capable of revealing information of a kind not primarily concerned with students' academic performance." But it is just this kind of information which somatotyping offers, and it has been shown here that once the top level of intellectual performance has been separated off, in this case by acceptance at the university, then physical features have the power to promote or handicap the efficiency of

intellectual equipment to an extent which many find surprising. It is important to emphasize that these findings have been shown only in conjunction with current methods of selection; it in no way follows that anything comparable would be found in a preselected sample of candidates for university education.

Somatotyping clearly has something valuable to offer in the assessment of personality. The results may be correlated with success in school examinations, in university examinations, in industry, or in the armed Forces, and it is noteworthy that success itself has its own peculiar qualities in each of these differing spheres. Just as it would be folly to discard psychological tests or current methods of selection because, single-handed, they fail to achieve what is wanted, so it will be generally recognized as equally unreliable to attempt to depend on physical measurements alone. One might improve the overall level of final performance considerably, other things being equal, by selecting mesomorphs, for example, in preference to those with "eastern central" physique, but there are obvious dangers in disturbing the balance of temperamental characteristics among the selected group: one might, for example, disturb recruitment for research. Because of the many factors involved it is necessary to proceed with great caution. What is needed is further combined study, in which somatotyping might with profit be included. In any case, up to the present time insufficient data are available to make separate studies of success possible within each faculty, and the association of choice of faculty with somatotype has already been demonstrated (Parnell, 1953a).

That somatotyping is practicable on a large scale is shown by the fact that it was possible to include it for purposes of health assessment at the routine medical inspection and chest radiography carried out on all new entrants at the University of Birmingham in 1952 and 1953. Three measurers and three clerks were employed for one week on each occasion to measure over 700 students, the procedure taking six minutes for each subject. A further week's work by me was required to complete interpretation of the measurements, and it may be claimed, therefore, that the method is economical in both time and money. The information so gathered is now available for forward-looking investigations of both academic failure and the allied problem of mental disturbance.

Summary and Conclusions

The Sheldonian somatotype distributions of men undergraduates at two Oxford colleges have been examined with special reference to selection, awards, and final honours class. They contribute substantially to knowledge of what happens where current methods of selection work comparatively well; they add, however, to understanding of the principles on which better selection might be based. Better selection of university students is a matter of compelling urgency, and the possible use of somatotyping for this purpose in conjunction with other methods is accordingly discussed.

The following were the conclusions derived from the investigation:

1. *All-rounders* who both played games and got a first-class degree congregate somatotypically just on the muscular side of the mid-point of the distribution.

2. More somatotypes with mid-range body proportions were found at Oxford than among the American university students reported by W. H. Sheldon. Certain peripheral somatotypes who enjoy university education in the States do not appear to gain admittance at Oxford.

3. A significantly higher proportion of central somatotypes compared with peripheral somatotypes held college awards at Oxford.

4. *First-class Honours.*—Endomorphic ectomorphs obtained a significantly high proportion of first-class honours (35%). This compares well with the 34.4% of firsts obtained by all scholars and exhibitioners. It is especially interesting to note that of 15 scholars and exhibitioners with this dominance 12 obtained firsts—an extraordinarily high proportion of 80%. In contrast to all this a significantly low proportion (4.3%) of central mesomorphic ectomorphs ("eastern central" sector C. 345–334) obtained firsts.

5. *Third-class Honours.*—The highest proportion of men with third-class honours was found where the proportion of first-class men was lowest—the eastern central sector. The lowest proportion of thirds was found among mesomorphs.

6. *Second-class Honours.*—Mesomorphs, of whom 65% obtained second-class honours, had the highest proportion. The lowest proportion (41.1%) was found among mesopenes. The difference is significant.

7. "Ectomorphs were found to enjoy the widest range of possibilities for better and for worse." These words were used by Sheldon and Stevens (1942), and their results are here confirmed. Mesomorphs were most consistent in attaining a good level of performance with first- or second-class honours. Endomorphs did well when supported by sufficient mesomorphy.

8. *Awards.*—Endomorphic ectomorphs who did exceptionally well in finals received only a near-average proportion of awards on entry. Ectomorphic mesomorphs received an outstandingly high proportion of awards at entry, but in their final examinations these scholars and exhibitioners did least well.

9. Doctors of philosophy in scientific subjects show a significant tendency to be central ectomorphic mesomorphs.

My thanks are due to Mrs. C. C. Standley and Mrs. S. C. McIntosh for their help in analysing the measurements. Dr. I. Skottowe kindly read and criticized the manuscript. The study, which covered five years and formed part of a long-term investigation of the health, sickness experience, and performance of undergraduates, was undertaken in conjunction with the pilot student health service supported financially by the Nuffield Foundation.

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So diverse and voluminous have medical statistics become since 1948 that a guide to them such as Benjamin provides in the *Journal of the Royal Statistical Society*, Ser. A, 1954, **117**, 210, will be widely welcomed. While the sources of raw statistics are no doubt well known to trained statisticians, there are many medical men who must have occasional recourse to a type of information that is apt at first to seem as forbidding as it is unfamiliar. For them the new guide will be particularly useful. It is one of a series being published by the Royal Statistical Society. The list of 76 references is split up under headings that correspond to general headings in the text, so that the key papers to the statistics of a subject, or the sources of its statistics, may be discovered the more readily. Besides official statistics published by the Registrars-General and other Government offices, Benjamin discusses the statistics of general practice, the hospital service, clinical trials, genetics, and other branches of the subject.

THE VALUE OF MEDICAL CERTIFICATES FOR STUDENTS ENTERING A UNIVERSITY

BY

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The University of Wales Student Health Service introduced a system of medical certification for new entrants to the current academic session. It had become apparent that, in order to ensure effective continuity of medical care, information about the health of entrants was needed before the beginning of the session, particularly in the case of students who would be living away from home. Moreover, experience had shown that a number of students each year embarked upon courses of study with definite careers in mind, only to find, subsequently, that entry to the career or profession of their choice was debarred on medical grounds of which they were quite unaware. It was felt that, with the co-operation of the entrant's general practitioner, arrangements could be made for continuity of medical care for those who needed it. By asking appropriate students to attend for interview soon after the commencement of the academic session advice could be given about the medical requirements of particular careers and courses of study, and possible future disappointments avoided. It was emphasized that the purpose of the certificate was not to exclude prospective entrants to studies on medical grounds, that forms would be issued only to students who had already been accepted, and that information provided would be treated in the strictest confidence.

Form of Certificate.—General practitioners were not asked to examine the entrants but to give an opinion, based on previous knowledge, about their general health and to state whether there was a history of illness or disability likely to be a handicap to a university career or which would make continued supervision or treatment necessary. Rheumatic carditis, congenital heart disease, disorders of special sense organs, asthma, bronchiectasis, diabetes mellitus, epilepsy, pulmonary tuberculosis, and congenital or acquired orthopaedic disorders and disabilities were given as examples. A specific question was also asked about disorders of a nervous character, and space was provided for additional comments.

Results

Many of the comments, though not necessarily relating to the specific questions asked, were of considerable value. It was evident that without exception practitioners had co-operated whole-heartedly in what must for many have seemed an additional chore. Such remarks, for example, as "I have known the candidate since infancy—he has always been fit—is keen on all forms of sport and comes from a very good home background—he should make a good student" were not infrequent.

Of the 1,024 certificates returned, 723 related to men and 301 to women. The total falls short of the actual number of admissions to the University, because a small number of students from Welsh and English homes failed to return certificates and few were received from Colonial and Overseas students, many of whom arrived in this country only a few days before the beginning of term.

Not all the disorders and disabilities notified are included in the accompanying Table, but only the more interesting and important. The numbers are too small upon which to base prevalence rates for the sexes separately, but prevalence rates for the sexes combined have been calculated. In addition to the conditions in the Table, one man was admitted with "mild pneumoconiosis"; and, among the women, one was almost totally blind, and another, a married woman, was in the last trimester of pregnancy. Two of the students with epilepsy had hoped to enter the teaching profession and were advised to think of alternative careers. One of the students with rheumatic carditis developed subacute bacterial endocarditis after little more than two months in residence. As to the remainder, their medical conditions and academic progress will be watched with special interest.

Disorders and Disabilities Notified

Conditions	No. of Men	No. of Women	Persons	
			No.	Prevalence per 1,000 Entrants*
Previous history of pulmonary tuberculosis (including pleural effusion and hilar adenitis)	4	2	6	5·9
Under surveillance as tuberculosis contact	1	2	3	2·9
History of asthma:				
Still having attacks	13	2	15	14·6
Attacks in the past—now infrequent	6	2	8	7·8
History of rheumatic fever:				
Without residual disability	4	1	5	4·9
With residual cardiac lesion	4	2	6	5·9
Epilepsy	3	1	4	3·9
Psychological disorders (anxiety state, schizoid personality, "is highly strung," enuresis, stammer)	14	5	19	18·6
Bronchiectasis, pulmonary fibrosis	1	2	3	2·9
Ear, nose, and throat (recurrent sinusitis, deflected septum, otitis media, deafness)	8	4	12	11·7
Diabetes mellitus	1	1	2	1·9
Surgical conditions (sequelae of operations or awaiting operation)	7	—	7	6·8
Orthopaedic conditions (including congenital defects and deformities, osteochondritis of spine, tuberculosis, etc.)	7	1	8	7·8

* Based on the number of certificates received.

University administrators are, not unnaturally, reluctant to apply medical sanctions to university entrants. Few would disagree with this point of view. If this memorandum does nothing else, however, it draws attention to the value of the family doctor's report as a means of identifying students with disabilities at the beginning of their university careers.

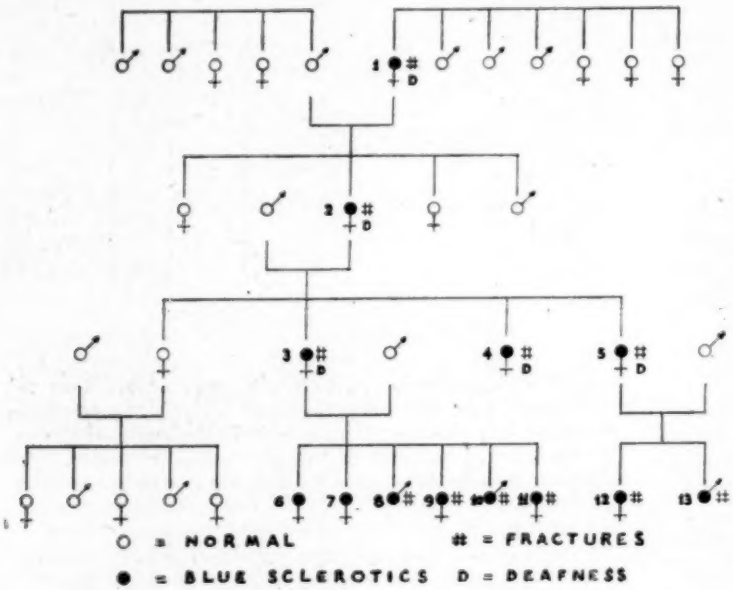
Thanks are due to Provost R. M. F. Picken, to Professor F. Grundy, to my colleagues, Drs. R. A. N. Hitchens and Edith McKnight, and also to the many general practitioners who returned the certificates.

In the recently published Annual Report for 1951 of the Director of Medical Services of British Guiana reference is made to malnutrition in schoolchildren. At routine medical inspections of children in the rural areas 85% of nearly 1,000 children showed signs of defective nutrition due to deficiency of vitamin A and vitamin B complex. Seventy-four of these pupils were infected with ascaris, 23 with hookworms, 10 with both ascaris and hookworm, 3 with *Trichuris trichiura*, and 138 with scabies. Among schoolchildren in the city of Georgetown the most prevalent defects detected were dental caries in 90% and signs suggestive of deficiency diseases from the lack of vitamin B complex and vitamin A. All children found to be suffering from nutritional defects as a result of poverty were provided with a midday meal at the nearest school breakfast centre, and all under-nourished children received supplies of cod-liver oil and liver extract to accelerate the rate of recovery. Children taking school meals also received 10 g. of food yeast daily as a supplement to each hot lunch. "This measure effected a fair degree of improvement in the health and general efficiency of the pupils."

Medical Memoranda

Fragilitas Ossium: A Report of a Family

"Needless writing may be avoided by the statement that we know practically nothing of the aetiology of the condition (fragilitas ossium) beyond the fact that there is a strong element of heredity involved." It was nearly 50 years ago that Lovett and Nichols (1906) wrote these words, but they may still be considered true to-day. Spurway (1896) was the first to recognize the triad of blue sclerotics, liability to fractures, and familial occurrence. Bell (1928) in an exhaustive paper surveyed all previously reported family trees. Included were 25 families with 241 affected individuals, all occurring in Great Britain. Since then 13 families with 129 affected individuals have been reported in British literature. Thus, in all, 38 families totalling 370 affected individuals



have been reported in this country. This familial condition is therefore uncommon, which perhaps justifies the recording of a family tree hitherto unpublished.

Case Report

On July 23, 1953, a woman aged 34 was admitted to hospital with suspected skull fracture. She gave a history of multiple fractures in her childhood. It was noted that her sclerotics were of a slate-blue colour and that she was partially deaf. Inquiry revealed that others in her family were similarly affected.

In order to define the family history three of the members were interviewed and others gave information by personal correspondence. As a result of this information the family tree (see diagram) was compiled.

Comment

Thirteen members of this family have blue sclerotics. Of these, 11 have suffered multiple fractures and 5 are partially deaf. The varying severity of the disease is indicated by comparison of Case 5, who has had only three rib fractures, with Case 13, who has suffered 41 fractures of limbs.

The liability to fractures ceases at the time of onset of otosclerotic deafness, at the end of the second decade. These findings are in accord with previous reports.

I wish to thank Dr. B. Gottlieb for his advice and for permission to publish Case 4, and Dr. E. Williamson for help afforded.

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Traumatic Diaphragmatic Hernia

Numerous historical cases of traumatic diaphragmatic hernia were reported by J. Reid in 1840, and were mostly due to injuries, penetrating and otherwise, received in warfare or in private quarrels. The following case is of interest in view of its relative rarity in civilian practice.

Case History

On May 5, 1952, a previously healthy man of 48 accidentally left his car in gear while using the starting-handle. The car came forward and the front bumper crushed him across the lower chest against a nearby lorry.

He was admitted to hospital in a shocked condition and in great pain. There was no evidence of internal haemorrhage, but orthopnoea was a prominent feature. The most striking symptom at this stage was severe dysphagia. Water and saliva could be swallowed only with the greatest difficulty. The bruise caused by the bumper could be seen across the lower chest and epigastrium. Breath sounds were absent over the left base, but no adventitious sounds or mediastinal shift could be elicited. In the abdomen no distension or free fluid was detected. A straight *x*-ray film showed an irregularity in the left dome of the diaphragm, and diaphragmatic injury was suspected.

On the following day his condition was much improved and he could swallow fluids without difficulty. This change may have been due to a widening of the hernial orifice, leading to relaxation of constriction at the cardiac end of the stomach. On May 7, however, his abdomen was distended and he reported that he had passed neither flatus nor faeces since the accident. He was very short of breath and had a constant desire to eructate, but it hurt him to do so. A barium swallow showed the fundus of the stomach above the diaphragm and distended with gas, and that as the stomach ascended into the chest the greater curve had revolved upwards and the lesser curve downwards owing to its fixation by the left gastric vessels. No diaphragmatic movements could be detected. A barium enema showed an obstruction at the site of the splenic flexure, and this flexure was in an abnormally high position. A diagnosis was then made of ruptured diaphragm with herniation of the stomach and colon.

At operation the combined thoraco-abdominal approach recommended by Carter and Giuseffi (1948) was used. The eighth rib was resected as far back as its angle. By this means the distended colon and bulky omentum were more easily displaced downwards, though it was realized that, had the hernia been smaller, the thoracic approach recommended by Blackburn and D'Abreu (1945), Robertson (1947), Dunhill (1948), and Dugan and Samson (1948) would have been perfectly adequate. A transverse tear 5 in. (12.5 cm.) long was found in the left dome, extending as far as the oesophageal hiatus, and through it the stomach, left lobe of the liver, splenic flexure, and greater omentum had passed. The edge of the opening was frayed and of normal thickness, except at the medial end, where it became smooth and thin, suggestive of a *pre-existing* hiatal defect. The stomach was emptied through an oesophageal tube and returned to the abdomen without difficulty. The splenic flexure and omentum were wrapped in moist towels and delivered through the abdominal end of the incision. The tear was then repaired with mattress sutures of silk reinforced by a second row of interrupted sutures in a manner similar to the Mayo repair for para-umbilical hernia.

No attempt was made to close the hiatus completely, as what was left of it after repair was protected by the left lobe of the liver and, according to Robertson (1947), there is always a risk of placing a suture too close to the oesophagus and so causing a stricture. Crushing of the phrenic nerve is recommended if the diaphragmatic movements make repair difficult (Lam, 1950), or if there is a gross diaphragmatic defect (Dunhill, 1948). In this case, however, it was

considered unnecessary. The wound was then closed in layers, positive intrathoracic pressure being induced by the anaesthetist before final closure of the thorax.

Apart from transitory paralytic ileus and a pleural effusion which required aspiration, the patient made an excellent recovery and returned to work in the middle of July.

DISCUSSION

The apparent increase in cases of diaphragmatic hernia, both traumatic and otherwise, in recent years is due partly to better methods of diagnosis and partly to the realization that apparently vague digestive and respiratory symptoms may be due to this condition.

The variety of diseases with which diaphragmatic hernia may be confused led Harrington (1950) to regard this condition as "the masquerader of the upper abdomen." He described two groups of symptoms which may follow traumatic herniation: (1) Cases in which the stomach only is involved, giving rise to predominantly gastric symptoms; and (2) cases in which other viscera, particularly the colon, become herniated, leading to symptoms of intestinal obstruction. In the above case the two groups of symptoms appeared consecutively.

Harrington stressed the need for early surgical intervention because of the risk of strangulation, a risk which has been emphasized by Borrie and Foreman (1948), and by Carter and Giuseffi (1948).

In discussing the aetiology Jenkinson (1925) maintained that trauma played an unimportant part and that a congenital weakness was present in every case, but this view was not shared by Harrington and Kirklin (1938), or by Harrington (1940), who believed that trauma played a predominant part.

In many cases a congenital deficiency can be found either in the central portion or through the sinus of Morgagni. In the case described above the apparent defect was in the region of the oesophagus, and lends support to Jenkinson's view, though the severity of the injury might well have been expected to rupture even the strongest diaphragm.

In Harrington's series of 60 traumatic herniae, automobile accidents accounted for no fewer than 42, and in the majority of cases quoted by Reid (1840) a history of penetrating injury could be obtained.

I wish to thank Mr. D. B. Craig for permission to publish this case; Mr. Geoffrey Wooler, of Leeds, for helpful criticism; and Dr. Mark Burbury for the radiological examination and reports.

G. R. C. PEATFIELD, F.R.C.S.

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Closed Incomplete Rupture of Pectoralis Major

A case of this condition due to apparently trivial injury is reported because of its rarity.

CASE REPORT

A healthy man aged 30 was admitted to hospital on December 4, 1952, following an injury at work. While stooping forwards he was struck over his right loin and right buttock by a small light wagon as it passed behind him. As a result he fell forwards across a low wooden rail, the force of his fall being taken on outstretched arms and chest. He did not make any complaint of his chest, being more concerned with pain in his back.

He was transferred to the orthopaedic department on December 9. When first seen he had a large fluctuant swelling over the buttock from which 25 oz. (710 ml.) of old blood was aspirated. *X*-ray examination of the lumbar spine and pelvis was negative. No complaint of pain in the arm or chest was made. It was not until the patient remarked, some three weeks after coming under our care, that a lump had appeared in his left breast that the present condition was diagnosed.

On examination of the left pectoralis major a gap was readily palpable extending upwards from the lower border

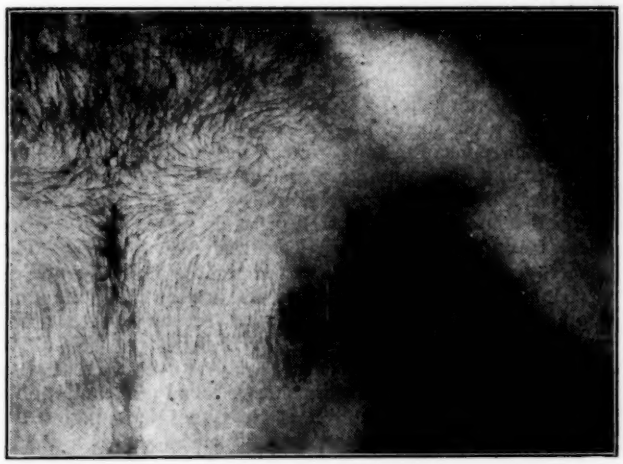

FIG. 1.—Arm relaxed.

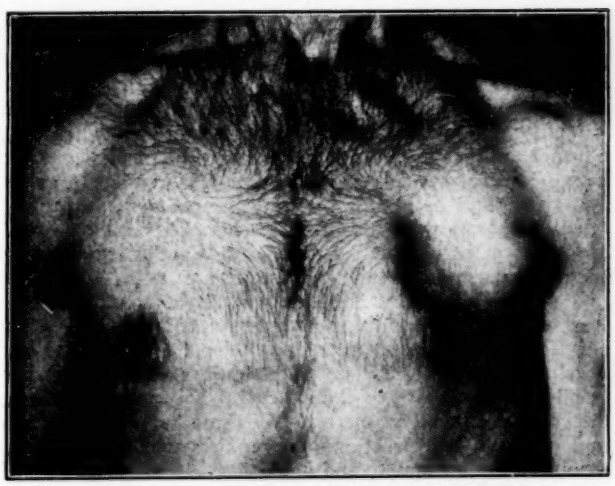

FIG. 2.—Arm forcibly adducted against trunk.

of the anterior axillary fold for 2½ in. (6.3 cm.) at the junction of the inner third and outer two-thirds of the fold. On tensing the muscle by active compression of the hand-on-hip position both ends of the torn muscle became more obvious. The clavicular head was quite intact.

COMMENT

It is remarkable that the lesion was not noticed earlier, for it must have been present on admission. Doubtless owing to the patient's attention, and ours, being directed to the back, it passed unnoticed for a time.

No surgical intervention was suggested, for the strength of the arm is unimpaired and the patient is unconcerned about the lump.

I wish to thank Mr. J. P. Heron, under whose care the patient was admitted, for permission to publish this report.

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Reviews

SCHOOL EDUCATION OF THE MEDICAL STUDENT

Preparation for Medical Education in the Liberal Arts College. By Aura E. Severinghaus, Ph.D., Harry J. Carman, Ph.D., and William E. Cadbury, jun., Ph.D. (Pp. 400. $4.50.) New York, Toronto, London: McGraw-Hill Book Company, Inc. 1953.

This is a valuable contribution to medical education, and in the compass of a review mention can be made of only a random selection of its excellencies. The authors are spokesmen for a small committee charged with following "the so-called 'pre-medical' student back into the liberal arts college in order to see more clearly what these years contribute to his education for future professional responsibility." To this end the committee visited rather more than 100 colleges, a substantial proportion of whose graduates entered medical schools. As the result of willing co-operation from these institutions a wealth of material was gleaned. The diversity of the educational system in the United States is such as to make such study harder and at the same time more rewarding than a comparable survey of the much more standardized high schools of Britain.

The report is remarkable not only for its factual data but for the critical analysis, shrewd comment, and noble idealism of its comment. It is clear that in America the pressure of narrow vocationalism directed towards a secure and lucrative livelihood is just as great as in this country. In this respect the report eloquently and uncompromisingly insists that the role the doctor has to fill in the community demands that he should have a broad education embracing not only the natural sciences but some knowledge and appreciation of man and his environment in the widest sense of the term. Furthermore, every effort must be made to develop the student's critical faculties and to instil a scholarly outlook that will ensure that his education will advance and enlarge throughout his life. Condemnation is expressed of systems which segregate the college (or fifth and sixth form as in Britain) students into a medical class. Great importance is attached to character-building extra-curricular activities calculated to develop the student's capacity to understand and sympathize with people. The moral and ethical climate of the seminary is regarded as of at least as much importance as its purely scholastic tone. Considerable space is devoted to appraising current defects and excellencies in the teachers themselves. The authors are keenly aware that the development of a sound educational system is not merely a matter of devising balanced curricula and progressive instruction, but requires teachers who can inspire by both example and precept.

Anybody seriously interested in medical education, indeed in education generally, should not only see but possess and frequently return to this book. Congratulations and thanks are due to Dr. Severinghaus, his colleagues, and the John and Mary R. Markle Foundation, who so generously supported the survey.

W. MELVILLE ARNOTT.

THE KNEE-JOINT

Diseases of the Knee: Management in Medicine and Surgery. By Anthony F. DePalma, M.D. Drawings by Carl Brill. (Pp. 840+xxi; 455 illustrations. £8.) London, Philadelphia, Montreal: J. B. Lippincott Company. 1954.

This is a large book and the most comprehensive one on the knee-joint in the English language. In indicates the increase of knowledge in orthopaedic surgery during the last thirty years. The subject matter is less limited than the title suggests, as there are chapters on the anatomy and mechanics of the knee, on the results of all forms of trauma, and finally one on tumours of and around the joint, all described in great detail. In fact, only one-tenth of the book is allotted to the "arthritides," and there is little reference to tuberculosis.

The literary ability of the author is known to us from his writings on the shoulder and the series of volumes entitled "Clinical Orthopaedics." In this present work on the knee there is a wealth of information. Each chapter reads well, as the material is classified, those on disorders of the extensor apparatus and on deformities being of particular value. The reader will find that he can learn details of the anatomy, mechanics, and causation of every described condition of the joint. The treatment is discussed. Although clear accounts are given of surgical approaches and operative technique, the management of each condition forms the basic principle of treatment. Enthusiasts for any one line of treatment or operation will do well to study the author's broad approach to therapeutic measures. He clearly expounds the function of the patella and condemns its routine removal for affections and injuries. Alternative methods of treatment of many conditions of the knee-joint are mentioned, including a variety of operations—to an extent that the young surgeon may find it difficult to know which method is the one of choice for the lesion which he is treating.

The reader will be impressed by the excellent quality of diagrams, mostly by Carl Brill, and by the reproduction of radiographs. Their size and placing are helpful, and the publishers are to be congratulated on a volume of a standard now associated with their house. They and the author do a service to surgery by helping its teaching by such books. Many orthopaedic surgeons look forward to similar volumes on the hip- and elbow-joints. The work of many English surgeons is freely quoted, and the arrangement of the bibliography is most useful.

ST. J. D. BUXTON.

ENDOCRINOLOGY OF SEX

Reproduction and Sex. By G. I. M. Swyer, M.A., D.M., D.Phil., M.R.C.P. (Pp. 280+viii; illustrated. 25s.) London: Routledge and Kegan Paul, Ltd. 1954.

Few people are better equipped to give an up-to-date account of reproduction and sexuality from the endocrinological angle than Dr. Swyer, consultant endocrinologist and director of the Fertility Clinic of University College Hospital. His research is well known to everybody who has taken an interest in the subject of human fertility, and it is satisfactory to have it documented now in a textbook which is likely to become a standard work on the endocrinology of sex. Much progress has been made during the last two decades in this particular department of medicine, at any rate on the gynaecological side of it. Unfortunately, the treatment of the sterile and the subfertile male lags behind the treatment of analogous conditions in the female. "Defective spermatogenesis, common though it be, carries with it a poor prognosis, for although numerous forms of treatment have been tried—dietary restriction or increase, vitamin supplementation, thyroid, testosterone, and gonadotrophin administration and so on—it is doubtful whether any of these is successful except rarely." Dr. Swyer does not bother us with details of the various forms of treatment recommended for the infertile male, and he is fully justified in not doing so, for, as he adds in a later paragraph, the most hopeful form of treatment in the case of the male is preventive rather than curative.

This is an admirable and well-written book by an acknowledged expert on the subject, and it should find an honourable place on the bookshelves of both gynaecologists and general practitioners.

KENNETH WALKER.

Textbook of Physiology and Biochemistry (Livingstone, 50s.), by George H. Bell, J. Norman Davidson, and Harold Scarborough, has now reached a second edition. The review in the *Journal* of the first edition concluded: "Authors and publishers are all to be congratulated on providing a good all-round book which should appeal to a wide range of students." The same may be said of the present revision.

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SELECTION OF MEDICAL STUDENTS

Interest in procedures for selecting students has grown apace, and with the appearance of more and more tests supposed to discount the selectors' bias many are aware of the need to prevent screening methods from becoming too elaborate. The opening papers in this week's *Journal* roused much interest when read at the First World Conference on Medical Education in August last year. Dr. A. E. Severinghaus writes critically of experience in the United States, where they "have long passed the stage of general intelligence tests and aptitude evaluations, and now have available more modern psychological and psychiatric examinations which are designed to appraise emotional stability, personality, and even motivation." Quite apart from the possibility that such tests may inaccurately appraise the potentialities they are designed to assess, there is the more subtle danger that the user of them may think he knows more or less precisely what sort of personal qualities the prospective doctor ought to have. Yet men and women who qualify as doctors take up subsequently such widely differing spheres of professional work as general practice, laboratory research, industrial medicine, university teaching, medical statistics, consulting practice, and medical administration, to mention only a few possibilities, and qualities which are an advantage in some of these fields may be of little use or even a handicap in others. There is room for many different types of mind and personality in modern medicine, and surely it is more important to select men and women with good if diverse qualities than to try to mould all into some single and perhaps erroneous conception of the ideal doctor.

Much has been written of the "ideal" medical student, who is too often visualized as a paragon of all the virtues, but, as Dr. R. Whitehead put it at the First World Conference on Medical Education: "Let us remember that students are merely ourselves when young." However, there are two sorts of ideal worth distinguishing here, one not altogether unattainable. First, there is an ideal in which the student excels in the number and scope of the studies he has pursued, and in the range and variety of his personal attributes: this is apt to be limitless and beyond the range of time and the human mind. The other is a more qualitative and a less remote ideal: we are concerned less with the scope than with the quality of the applicant's educational achievements, and more with the standard than with the number of his qualities of character. It matters little exactly what pattern of specialized premedical training the applicant has received provided he has been truly educated and has the ability to think for himself; nor should it matter too much whether he possesses all the ideal personality traits, so long as he has a real sense of vocation and aims at professional achievement and not financial gain or social security.

These problems of selection have arisen largely because of the post-war disproportion between the number of applicants and the available places in medical schools. As might be expected, however, the increased number of applicants does not denote a corresponding increase in the number of suitable candidates. Most of those who select medical students seem to believe that there may be even fewer applicants of a suitable standard than before the war. The recent decline in the quality of applicants which Dr. D. Brinton notes in an article at p. 483 is particularly disturbing, for he suggests that it implies a deterioration in the motives for entry, a desire for achievement being replaced by a search for security. This may well explain the larger number of applicants, for there are likely to be more whose aim is social or financial security than who sincerely aim at professional achievement. It is probably true that those with the most original and independent minds will be discouraged from entering any field of activity in which they cannot be assured of freedom from administrative domination, and they will regard security as an inadequate substitute for freedom. If the profession is to attract men of a high calibre it must constantly be on the alert to prevent administrators from dominating the medical services.

The nature of medical education also plays an important part in determining the standard of applicants for entry. Schoolmasters do much to help their pupils to decide upon a career, and they will naturally tend to discourage their most educable boys from entering medicine if they believe that the medical course is merely a highly specialized vocational training which does not aim to impart at the same time some measure of liberal education. Medicine has always been regarded as one of the traditional liberal studies, but the rise of technical medicine in the last fifty years has seriously undermined that tradition, and this may yet prove to be the most serious obstacle to securing the best type of recruit to our profession. These trends are the more regrettable because medicine has never

been in greater need of the best brains and it has never offered better opportunities to those possessing them. Much can be done to attract the best of the youth of the country into the arduous career of medicine, but to do this the medical profession must provide much more than improved methods of selection. Medicine cannot flourish in a bureaucratic atmosphere clouded with restrictive regulations, such an atmosphere will repel the adventurous mind: the administrative structure of the Health Service must be a blue-print, not a bundle of red tape. Medical education must be imbued with the university ideal, and in many places it is still far from this. A more deliberate effort should be made to give boys and girls at school some idea of what medicine is and means and demands of its practitioners. There is need, too, for a closer examination by school and university of the kind of basic general education that should be given to boys and girls wanting to take up a medical or scientific career. If a good proportion of the best of each generation, educated on liberal lines, seek to enter medicine, the problems of selection will be greatly simplified.

TYPES AND SHADOWS

Physicians, since the day of Hippocrates, have displayed an intermittent and varying interest in the classification of mankind by physical types. From 1830 to 1930, as scientific and mechanistic medicine was inspiring both the leaders and the camp-followers of medicine by its daily triumphs, the concepts of human typology increasingly assumed a mediaeval appearance and were happily discarded with the clysters, the blisters, and the bleedings of an unscientific age. Our immediate predecessors were as little interested in the four Galenic "temperaments" as in the horoscopes of the astrologer. Moreover, the scientific observer, whether physician or naturalist, was impressed, not by the similarity of God's creatures, but by their amazing diversity. Charles Darwin spent eight laborious years dissecting thousands of barnacles, and he wrote to Hooker in 1849: "I have been struck . . . with the variability of every part in some slight degree of every species. When the same organ is *rigorously* compared in many individuals, I always find some slight variability."

In this generation, although scientific medicine increasingly holds our enthusiastic attention, we have become more aware of the constitutional factors in disease, and many disorders—duodenal ulcer, hypertension, and ulcerative colitis, for example—appear to have an important constitutional component which we are eager to see elucidated. The modern pioneers of body measurement have therefore found a receptive audience, and among them Sheldon,[1] with his well-known photographic method, has the largest following. He has defined three components of body build—endomorphy (roundness), mesomorphy (muscularity), ectomorphy (linearity)—thus replacing Kretschmer's earlier description of pyknics, athletics, and leptosomes. This notion of components, when applied to the assessment of body types, required that each component should be measured (on a 7 to 1 scale) and necessitated the description of both primary and secondary dominance—for example, endomorphic ectomorphs. Kretschmer has been criticized for "a cardinal and ineradicable error"[2] in describing *types* rather than *component* structure, but whether Sheldon's detailed technique will be of more value than Kretschmer's broad grouping in relating body build to mental disorder remains to be proved. It may be that these descriptions of body architecture are more useful in surveying woods than in examining individual trees. The method of factor analysis[3] is also being applied to twenty body measurements (height, weight, length, breadth, and girth) in typing body build. Hammond,[4] using this method in children, is, like Kretschmer, content with three types—leptosomes, pyknics, and eurysomes. He states that secondary types also exist, but account for very little of the total variance.

These two methods are in strong contrast, and they will ultimately provide a useful correlation for each other. The factor analysis method is proceeding more slowly and should not emerge into a wider field, writes Hammond, "until one can be assured that the varieties of physique can be measured satisfactorily." Tanner[5 6] and Parnell,[7] who have used Sheldon's method extensively in this country and have made several improvements in it, are convinced that it is both valid and accurate. Although body types are basic and recognizable at the age of 5,[4] their proportions are not immutable and they are affected, for example, by both age and nutrition.

Having defined and measured his physical components, Sheldon[8] further exercised his brilliant talents by relating the types to three basic temperaments, each with ten attributes. Here he forsook the field of measurement and entered that of historical narrative. He labelled his types viscerotonia (endomorphy), somatotonia (mesomorphy), and cerebrotonia (ectomorphy). The temperamental qualities he describes are superficial expressions of mental and

[1] Sheldon, W. H., and Tucker, W. B., *The Varieties of Human Physique*, 1940, London.
[2] Tanner, J. M., *Lancet*, 1949, **1**, 405.
[3] Burt, C. L., *Psychometrika*, 1947, **12**, 171.
[4] *Hum. Biol.*, 1953, **25**, 65.
[5] *Proc. roy. Soc. Med.*, 1947, **40**, 301.
[6] *Lancet*, 1951, **1**, 574.
[7] *British Medical Journal*, 1953, **2**, 473.
[8] Sheldon, W. H., and Stevens, S. S., *The Varieties of Temperament*, 1942, London.
[9] See Hubble, D., *Horizon*, 1946, **84**, 345.
[10] See annotation in *British Medical Journal*, 1953, **2**, 553.

physical behaviour—such as tolerance, complacency, and slow reaction (viscerotonia); energy, aggressiveness, and unrestrained voice (somatotonia); love of privacy, fast reaction, and social inhibition (cerebrotonia). None of the described qualities is capable of exact measurement, and yet Sheldon committed them to the same numerical scale as his physical types. Considered as a *jeu d'esprit*, this book is excellent fun; but assessed as a contribution to our knowledge of human personality it is negligible. Nor is he content to limit his descriptions to human personality, for he writes, "For what is God, after all, if not a personification of all three basic components? God in three persons—the somatotonic Father, the viscerotonic Son, and the cerebrotonic Holy Ghost." The religious will be appalled by this jejune anthropomorphism, and the agnostic will be astounded by such sloppy thought and such loose expression.[9] Nor is Sheldon's contribution to abnormal psychology any more profound. He suggests that we should substitute for the time-honoured description psychoneurosis the terms viscerosis, somatorosis, and cerebrosis. The idea is breathtaking in its simplicity. It appears to assume that all neurosis has its origin in the conflicts that arise for an individual when there is an excess of any of the three basic endowments.

It must be left to the followers of Sheldon to erase these unhappy extensions of his somatotyping techniques from our memories, and this they are fortunately doing. Dr. R. W. Parnell (see p. 491) has related the somatotype of 321 Oxford undergraduates who have taken their degrees to their honours-class results, and some interesting facts have emerged. Endomorphic ectomorphs, whether commoners or scholars, obtained the highest percentage of first-class honours (35%), and of the 15 scholars with this dominance 12 obtained firsts. While this group of endomorphic ectomorphs achieved better results than were expected of them at entry, the ectomorphic mesomorphs, as a group, failed to maintain their greater promise. The all-rounders, *mens sana in corpore sano*, were found, as was to be expected, on the muscular side of the midpoint of distribution. The well-muscled undergraduates were also the most consistent in their achievement of first- or second-class honours. Parnell is making a fact-finding report and wisely does not seek reasons for these results, but he obviously hopes to demonstrate the physical structure which will best nourish, sustain, and protect a fine intelligence. The step from group analysis to individual prediction is long, and may well be impassable. Selection boards will not get more help at this stage from somatotyping than they do, in Bartlett's view,[10] from the candidates' intelligence quotients.

It is right, too, that those who are undertaking research into somatotypes in relation to human disease should take a modest and conservative view of the results that can be achieved. The explanations of constitutional disorders will be first disclosed in disturbances of the internal *milieu* and may be provided by the biochemists. This disturbance of the peripheral mechanism will be revealed long before the effects of the constitution, whether of soma or of psyche, on the development of disease can be exactly stated. Nevertheless it would be of great interest if it could be shown, for example, that a certain body build is as closely related to the occurrence of duodenal ulcer as is the O blood group.

STUDY IN THE UNITED STATES

"Educational relations make the strongest tie," wrote Cecil Rhodes in his will establishing the Rhodes Scholarship Fund. Growing recognition of this has meant that the number of travelling scholarships and fellowships awarded annually and applicable to medicine and the natural sciences has slowly increased. Two years ago we published[1] a short general review of the possibilities of postgraduate study in many parts of the world. For the most part young science graduates to-day prefer to make their Grand Tour in the North American, rather than the European, continent, and many opportunities for expanding their knowledge in this way are now open to them. In order to stimulate the exchange of scientific and medical information with Western European countries, the United States Foreign Operations Administration is providing funds for the award of 100 postgraduate training fellowships to European doctors. Fellowships of 3 to 6 weeks will be provided for the more experienced specialists, who may require brief study of a particular development in American medicine: these may comprise about one-third of the total. Another third are expected to stay in the U.S.A. for a year. The remainder, who will be mostly younger men and women, will stay two or three years. Rockefeller Travelling Fellowships, awarded on the recommendation of the Medical Research Council, are available for those wishing to study clinical subjects, and doctors can also apply for an ordinary fellowship under the Commonwealth Fund.[2] This philanthropic foundation emphasizes its belief in the value of study

[1] *British Medical Journal*, 1952, **2**, 484.
[2] Particulars from the Warden, Harkness House, 35, Portman Square, London, W.1.
[3] Particulars from the Cultural Affairs Officer, Room 302, 41, Grosvenor Square, London, W.1.
[4] Particulars from the Secretary, University Department, English-Speaking Union, 37, Charles Street, London, W.1.
[5] Particulars from United States Educational Commission in the United Kingdom, 55, Upper Brook Street, London, W.1.
[6] *American Universities and Colleges*, 1952, edited by Mary Irwin and published by the American Council of Education in Washington, D.C.

in other countries for the promotion of mutual amity and understanding—a belief, indeed, which is taken into account in the selection of candidates for practically all other fellowships for abroad. Thus fellows are expected to participate, in addition to their special interest, in many extracurricular activities, and to prove themselves to be ambassadors of good will wherever they go. They should be ready to attempt to explain their own country and its people, and to be alert in observing America and its people, desiring to see how greater closeness can be brought about among nations. Other possible sources of support include a U.S. Government grant under the Smith-Mundt Act, for either lecturing or research in the United States,[3] or the University Department of the English Speaking Union may be able to arrange grants for more junior students.[4] Occasionally British and American doctors or research workers can arrange direct interchange of jobs. A happy result of personal contact is sometimes seen when an institution in the U.S. requests the services of an individual for a limited period and offers to pay his or her salary.

Travelling fellowships are usually awarded for one year, but approval for a second year is often obtained. Successful applicants must undertake to return to the United Kingdom or other part of the British Commonwealth on completion of the fellowship and to reside there for at least a period corresponding to the duration of the fellowship. The purpose of this stipulation is to ensure that an appointment will not be accepted in the U.S. immediately after the completion of the fellowship. Marriage is generally no bar, but, while provision may be made for a fellow's wife and children to accompany him to the United States, the rate of pay, even if a higher stipend is awarded to a married man, is not enough to support a family there. His wife, however, like many American married women, may get paid work if her visa permits this, but it should be remembered that the wife's income will be taxed. The fellow's emoluments are enough for his own support; moreover, they commonly include certain authorized travel allowances while in the U.S. and are generally exempt from both American and British income tax. The award may cover travelling expenses between a fellow's home and his institution in the United States, or, if necessary, he can apply under the Fulbright Act for an appropriate travel grant.[5]

The greatest number of successful applicants for fellowships are between 26 and 32 years. There are two obvious points in the early stages of a medical career when it is appropriate for a graduate to seek such an award. The first is immediately after his undergraduate career, house jobs, and service with the Forces. Commonly he has only the vaguest of impressions of the exact nature of his specialty: his attitude is still largely that of the student, seeking further experience and a limited amount of teaching. He may desire to arrange to study for an American degree. The second stage is some four years later, about the age of 30, when, although primary importance is still attached to intellectual ability and to actual and potential achievement, preference for awards is given to applicants who have definite plans for a career. Experience in postgraduate study and in research then constitutes a valuable qualification for appointment. At this stage in his career the applicant can select more judiciously, he is mature enough to follow a course he has set, and, having worked for some four years or so probably in one institution, he would benefit from intellectual contact with new minds and fresh ideas. The danger of parochialism in medical outlook and interests is ever present. Both in clinical and in laboratory investigations a research worker should in his early years move around from technique to technique, so that later he will be capable of using the technique most appropriate to the solution of the problem he has set himself.

Senior applicants for a fellowship often find, on reviewing their previous activities, that they have permitted themselves to be intrigued by too large a number of relatively unrelated problems before narrowing down their curiosity to more purposive and intense research. They should therefore carefully consider their aims in applying for a fellowship and decide on the course they intend to pursue. Thus specific problems in the specialized field of study in the U.S. should have been settled in advance and the names known, in order of preference, of three American institutions[6] in which the candidate wishes to study. Successful applicants should remember that it takes time to obtain a visa and foreign currency and to complete other necessary arrangements. Thus it may be a year or more before they set foot on American soil and receive the friendly welcome that will certainly be awaiting them.

EMPLOYMENT PROSPECTS

This autumn about 2,500 students in Britain and Eire begin the long trek so variously depicted by last year's Conference on Medical Education and by *A Doctor in the House*. Whatever they may hope to find at the end of it, they at least expect a livelihood, but the chances of whether all of them will obtain it have been anxiously debated recently. When allowances have been made for loss by the wayside—and it is to be hoped there will always be some to agree with Somerset Maugham that the training is an ideal one for a literary career—when

[1] *British Medical Journal*, 1954, 1, 33.
[3] *British Medical Journal Supplement*, 1954, 2, 46.

these and other sources of wastage are allowed for, the number seeking an opportunity to practise medicine seems likely to rise for some years unless artificially checked. The assumption, therefore, that satisfactory permanent employment will be available for all those young men and women who are beginning their studies this year may be somewhat optimistic. As we pointed out earlier this year,[1] the number of doctors on the *Medical Register* increased by about 20,000 from 63,360 to 83,914 between 1939 and 1952. This is an expansion of 33%. The number fell to 83,090 in 1953, but this is more than counterbalanced by the 1,813 names provisionally registered. If present trends of the medical and general population of England and Wales continue, the students starting this year will find one doctor to about 800 of the population when they qualify instead of the one to about 900 which is the ratio now.

The great length of the curriculum makes the matter one of special urgency, for if the intake of students is kept at the same rate as it has been for some years a surplus of qualified men will be built up in the 1960s, and much hardship might be caused. Recognizing this, the Annual Representative Meeting this year carried a motion[2] instructing the Council to impress on the Minister of Health the need for speedy action in setting up a committee to study the problem. Speakers warned that medical employment was reaching saturation point, especially in the Health Service, where the great majority of doctors expect to make their living. The openings overseas that used to attract British doctors are now very much fewer than they were, and what would appear to be a guaranteed living in the N.H.S. has diminished the attraction of the Colonial Medical Service and armed Forces.

While some rough-and-ready calculations point to the situation that may arise if the medical schools continue to accept as many students as they have in recent years —and as they have this year too—there are difficulties about constructing a more precise estimate of the number of doctors the nation can afford. The present doctor–patient ratio of about one to 900 gives proportionately more doctors to the population than in some European countries where, owing to national poverty, there is nevertheless medical unemployment; it gives fewer doctors than in the U.S.A., which nation is able and willing to afford more medical attention. Consequently students now embarking on a medical career should be advised that they may well face stiffer competition in the future than their predecessors, and that the existence of the National Health Service is no guarantee of future employment.

HER MAJESTY'S OVERSEAS CIVIL SERVICE

The policy of the present Government, and doubtless of future Governments, is to encourage the advance of colonial territories towards self-government. In Africa, for instance, the Gold Coast has already achieved a measure of independence and Nigeria is moving towards it. It is natural in these circumstances that members of the Colonial Service, including medical officers, should be asking what their position will be when as a result of constitutional changes the home Government is, in the words of a recent White Paper,[1] "no longer able to exercise effective control over their terms and conditions of employment as hitherto." This uncertainty is said to have been responsible for a decline in recruitment to the Colonial Service, both in numbers and in quality, but, according to Mr. Henry Hopkinson, Minister of State for Colonial Affairs, evidence to support this contention is very slender.[2] There is no question of the work of the Colonial Service coming to an early and abrupt end; and while the economies and activities of the colonial territories continue to expand the skilled assistance of British staff, and medical officers in particular, will be needed for many years to come—a fact which the White Paper states is fully recognized by responsible leaders in the territories.

To help to overcome the doubts in the minds of many members of the Colonial Service the Government is to compile a list of all the officers in the service, including medical officers, who were selected for their present posts by the Secretary of State. On October 1, 1954, the term "Colonial Service" will be abandoned and all the officers on the list, and new recruits to the service after that date, will belong to "Her Majesty's Overseas Civil Service." The position of members of this service working in territories which attain self-government is in the future to be safeguarded by agreements which the home Government will conclude with local governments. According to the White Paper these officers are entitled to expect that the following conditions will be observed:

"So long as they remain in their existing employment, the government of the territory concerned shall not alter their terms of service so as to make them less favourable than those on which the officers are already serving.

"The pensions and other benefits for which they or their dependants may be qualified under existing laws and regulations shall be similarly safeguarded.'

"They shall continue to be regarded by Her Majesty's Government in the United Kingdom as members of Her Majesty's Service and as such to be eligible for consideration for transfer or promotion to any posts which the Secretary of State may be requested to fill in other territories.

"The government by which they are employed will not unreasonably withhold consent to their accepting any such transfer or promotion and will preserve their existing pension rights on transfer.

"They will be given adequate notice of any intention to terminate their employment in consequence of constitutional changes, and Her Majesty's Government in the United Kingdom will endeavour to find them alternative employment should they so desire.

"In the event of premature retirement resulting from constitutional changes they will receive compensation from the government of the territory concerned."

The setting up of Her Majesty's Overseas Civil Service does not go as far as some have wished towards a Commonwealth service or a British overseas service of officers directly employed by the home Government, though these are not excluded as possible future developments. Nevertheless it looks as if the new service will be more flexible than the old, for one of the special regulations constituting the service states that, while a member of Her Majesty's Overseas Civil Service has no claim to employment otherwise than in the office he has been

[1] Reorganization of the Colonial Service, 1954, Colonial No. 306, H.M.S.O., London.
[2] *Hansard*, April 2, 1954, 2500.

offered and has accepted, he will be eligible "for consideration by the Secretary of State for employment in any post which he may be requested or authorized to fill, and may also be considered, as opportunity offers, for posts in Commonwealth or foreign territories for which Her Majesty's Government in the United Kingdom may be invited to recommend candidates."

Besides doing something to allay the natural anxiety of some members of the colonial medical service about their future, the new form of service should be an encouragement to young medical men and women who have been attracted by the idea of work in tropical countries which badly need their help, but who have held back from joining the service because of fears that they might be forced to give up their chosen career at an early age. Any step is welcome which furthers the hope expressed in the White Paper, that "qualified men and women may be attracted to come forward in future as in the past, in a spirit of confidence, enthusiasm, and partnership, to help the overseas governments and peoples along the path of social, economic, and political progress."

THE FORMAL LECTURE

The lecture as a means of imparting verbal instruction by an authoritative teacher while the listeners sat in silence has come down to us from the mediaeval universities. It enjoyed supremacy in medical education until almost our own times. Not until laboratory facilities became more general and hospitals were brought into closer relations with medical schools did the lecture begin to be combined with practical work, to the great advantage of the student. Those who attended medical schools in an earlier generation must have been surfeited with lectures. G. N. Stewart, a writer on physiology, describing his experience in the medical school of Edinburgh in the early 'eighties of the last century, stated that the teaching in physiology then consisted almost entirely of lectures. Sometimes the lecture was delivered to an audience of 400 men, most of whom could witness only a far-off demonstration of a frog reaction. The course in materia medica and pharmacology was entirely covered by lectures. In his fourth year the student heard as many as 100 lectures on obstetrics and gynaecology.

At the First World Conference on Medical Education last year Professor G. P. Meredith, of Leeds, said that he did not regard the lecture as the appropriate medium for the presentation of factual information—its primary purpose being the communication of theoretical concepts.[1] It is certainly a common fault of lecturers to crowd too many facts into a single lecture. Again, a lecture good in substance can be ruined by a wrong method of delivery. It is not unknown for a lecturer, while continuing his address, to turn his back to the audience, thereby becoming inaudible, and fill a whole blackboard with faint and tiny symbols or figures which no one further back than the front row can make out; thus this part of the lecture is entirely lost, alike to the eye and the ear. Slides showing tables or graphs are often far too detailed for the student to absorb in the few moments of projection. The rapid conversational style, well enough suited to talk around a table, is quite out of place in the large lecture theatre. Some of the decline in the standard of lecturing may be laid at the door of the microphone, which many speakers think will do their speaking for them; some of it, perhaps, is due to a reaction from the overdone rhetoric and phrase-making of the past. But the pendulum has swung too far, and attendance to clear enunciation, choice of words, and turn of sentences is too much disregarded. Finally, who ordained that the lecture should go round the clock? A lecture has to be unusually interesting to keep the attention of a young audience for more than 40 minutes, which is twice the length of the orthodox sermon. The late Lord Dawson of Penn prescribed 40 minutes as the ideal length for a lecture, and he insisted on applying the limit to himself even when he was delivering his presidential address to the centenary meeting of the British Medical Association.

[1] *British Medical Journal*, 1953, **2**, 561.

MEDICAL ASSISTANTS IN THE TROPICS

In one or two colonial territories in tropical Africa the training given at the local medical schools, though of a high standard, is not yet officially recognized as equivalent to that of medical schools in the home countries. The difficulties to which this has given rise were discussed at a recent meeting of the Royal Society of Tropical Medicine and Hygiene. Dr. C. C. Chesterman, who has made a special study[1] of the training of medical auxiliaries in Africa, said that these "near-doctors" were not recognized as on equality with graduates from European medical schools, and were not normally given the facilities to take the final steps to becoming officially equal. Some of these men felt themselves perfectly competent to attain the full status, given the chance, and, indeed, under the Nigerian, Gold Coast, and French systems, had proved themselves able to do so. In Chesterman's view the "near doctor" has had his day in tropical Africa, and, while there still remains a need for "assistants" to registered doctors, they should be considered as temporary and replaced as soon as there are enough qualified persons to meet all demands.

The employment of persons auxiliary to fully qualified doctors remains essential for the full development of health services in almost every part of the world, and the training of these workers is largely a medical responsibility. Elsewhere in this issue Dr. S. V. Kurashov mentions that there are 600 schools for medical auxiliaries in Russia. At the meeting of the Royal Society of Tropical Medicine and Hygiene mentioned above several speakers agreed that in colonial territories the training should be more practical and less theoretical. Dr. K. W. Todd, for instance, said that in Papua large numbers of medical aides with modest training were wanted rather than more doctors with full qualifications. Basic needs for medical auxiliaries are everywhere very similar, and, as Chesterman has stressed, there is urgent need for more uniformity in policy, terminology, and training.

[1] *J. trop. Med. Hyg.*, 1953, **56**, 123.

THE CONTRIBUTION OF MICHAEL SERVETUS TO THE SCIENTIFIC DEVELOPMENT OF THE RENAISSANCE*

BY

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Pondering on the life and work of Michael Servetus one gets the impression that what has best secured his immortality is not so much his early and undeniable contribution to the physiology of the cardiovascular system or his views on the Trinity, but the tragedy of his death. Without the circumstances of his death his name would have been remembered now, at the four hundredth anniversary of his passing, only by a number of scholars. His contribution to the theological discussions of the first half of the sixteenth century do not seem any more important than those of a number of his contemporaries. Also his work on medicine, including his greatest contribution, the first printed description of the pulmonary circulation, outstanding though it is, is not thought to equal that of Vesalius in anatomy. Even the place of Servetus in the development of physiology is still being disputed by those who favour the priority of his contemporaries Realdo Columbus and Juan Valverde in describing the pulmonary circulation.

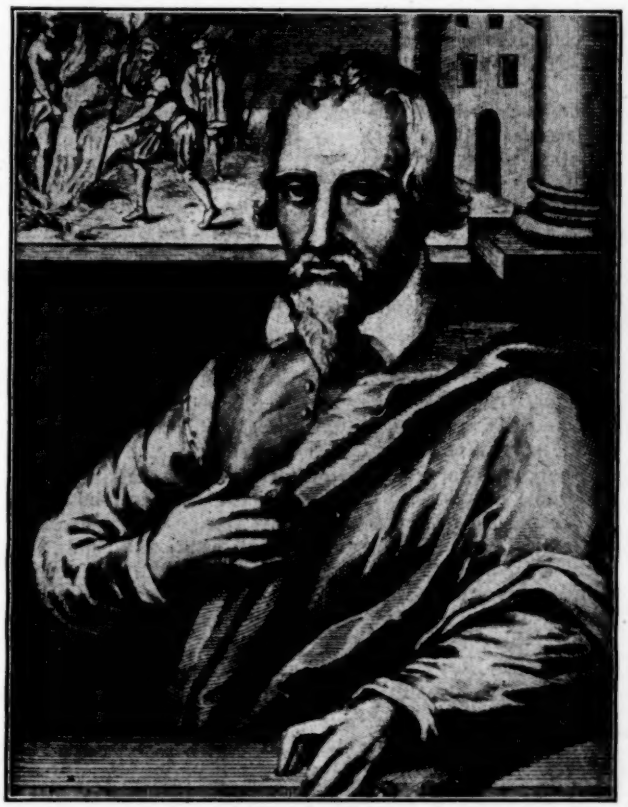
Four centuries after Servetus's tragic end one is surprised at Calvin's shortsightedness in bringing him to ignominious death. He who tried to remove Servetus and his works from the face of the earth made him immortal, at least for as long as there is any interest in the awakening of the conscience of modern man. Up to the present on every occasion that an anniversary of either Servetus's birth or of his death recurs the date is commemorated in the best way that a thinker may ever hope to be remembered—that is, by starting new interest in his contributions and particularly in his life. He is then not only reborn twice every century, but by the example he offered in confronting human intolerance he has become even more than a martyr of the old religious quarrels—a symbol for the modern Western man.

For a medical audience, I think that more appropriate than commenting on the religious writings of Servetus, a matter far beyond my competence and even interest, is to study his personality and some of the moulding factors which contributed to his own making and particularly the origin of his revolutionary physiological concept of the pulmonary circulation. Let us, then, analyse the early phase of his life until he definitively abandoned Spain at the age of 17.

His Birthplace

Among so many facts that still remain obscure about the life of Servetus, at least the place of his birth seems well established. He was born in the small village known as Vilanova de Sixena in its original Catalan spelling, or Villanueva de Sigena in Spanish. This village is situated in the area of Aragon adjoining Catalonia; administratively it is now part of the province of Huesca (Aragon), but still belongs to the bishopric of Lérida (Catalonia) as in ancient times. The monastery of Sigena had been founded by the Barcelonian Count Ramon Berenguer IV in the middle of the twelfth century, and was given to the Knights of St. John of Jerusalem. The father of Servetus, Anton Servet or Serveto, was a notary who worked at Sigena and who had married the Aragonian lady Catalina Conesa. She was the daughter of a nobleman, Don Pedro Conesa, and of Beatriu Çaporta. From this couple three sons were born—Michael the physician, object of the present address, Peter a notary, and John who went into the priesthood and became rector of the church of Polifiino.

For a long time many doubts existed regarding the place of Servetus's birth. The reason for this was due to Servetus himself. In the course of his trials in Paris and in Vienne he manifested that he had been born in Tudela (Navarra), and many old authors accepted his word on the place of his



Michael Servetus.

birth, forgetting that at the time of the Paris and Vienne trials Servetus was hiding his own personality under the name of Michael Villanovanus, this being the name of his birthplace, Vilanova de Sigena. It seems obvious that if he had stated that he had been born in Vilanova de Sigena, Aragon, he would have been identified with the Michael Serveto who had written a few years previously the heretic and most persecuted works *De Trinitatis Erroribus* and the *Dialogorum Libri VII*. In these two books he signs as Michael Serveto of Aragon. At the end of his life, during his trial at Geneva, when the identity between Servetus and Villanovanus had been established, he states clearly "qu'il est de Villeneufve natif au Royalme d'Aragon," thus reverting to his earlier statement. But what provided the most important data to locate his birthplace was the contribution of Dr. B. R. Barrios, who found in Sigena the scriptures signed by the father of Servetus. Already in 1511 he was signing as the notary of Sigena. The last document bearing his signature is dated 1553, the year of Michael Servetus's death.

It is known that from both sides Servetus belonged to the lower nobility, or what was then called in Aragon "Infanzones." Servetus was probably born in 1511, and it seems that he was educated in his early days in the monastery at Sigena, but we do not know where his

*Abridged version of a lecture read to the Osler Club, at the Medical Society of London on November 13, 1953.

secondary education took place. It is supposed that he had been at the University of Saragossa, but no evidence of this exists.

Influence of Sabonde

From Spain, at the age of 14, he went to Toulouse, in the South of France, to study law. The School of Law in Toulouse was reputed to be one of the best in Europe, and in Servetus's time the inquiring spirit of the Renaissance was more alive there than in either Saragossa or Barcelona. While in Toulouse he became interested in the theological discussions of the early Reformation, and decided to enter into what may be called a personal research on the biblical scripts. It is known that he read the *Loci Theologici* of Melanchthon and probably the *Theologia Naturalis Liber Chreaturorum*, which had been written in Toulouse in the early fifteenth century by the rector of this University, Ramon de Sibiude (Sabonde), a scholar born in Barcelona in the second part of the fourteenth century, who left Catalonia to teach medicine and theology at the University of Toulouse until he died in 1432. Through Michel de Montaigne we know the interest which was felt during the Renaissance, particularly in France, for the book of Sabonde. It has been said that Sabonde put forward some of the bases for the modern scientific approach; a thinker with a rationalist mind as that of Montaigne was so impressed by the reading of the *Theologia Naturalis* that he translated it into French, following the advice of his own father, a contemporary of Servetus in Toulouse.

The *Theologia Naturalis* had been printed ten times before 1527, with the first edition in 1480. Four of the editions came from Lyons and two from Strasbourg. Many of the ideas of Sabonde may be found in the writings of Servetus. As an example we find Sabonde explaining how the rational exposition of God's revelation of Himself may be found in Nature, while Servetus inserted the description of the pulmonary circulation, which he called a "most admirable process," in support of his theological beliefs in the chapter dedicated to the Holy Spirit. He adduces an anatomical and physiological observation to sustain his theological opinions in a manner very close to that recommended by Sabonde. In some of the letters that Servetus sent to Calvin we may detect the same influence—for example, when he writes: "And what are after all the laws of Moses? If they are conformable to Nature, they are laws of God, the author of Nature, older than Moses and to be observed by Christians independently of Moses."

Sabonde had written in the preface of the *Theologia Naturalis* that two books are given to us by God for our guidance: "One the universal book of created things or the book of Nature. The other is the book of the Sacred Scriptures. The first was given to man in the beginning when the world was made, the second is the supplement and solves the difficulties met with in the first. The book of Nature cannot be falsified, neither can it be readily interpreted amiss, even by heretics; but the book of the Scriptures they can misconstrue and falsify at their pleasure." It was this belief that brought Servetus into the dangerous path of reinterpreting the Scriptures.

At the Italian Court

In 1529, after he had finished his studies in Toulouse, he went back to Barcelona, where he met the Franciscan Joan de Quintana, a Majorcan who was later to become the Confessor to Emperor Charles V. Servetus was engaged by Quintana as a kind of private secretary and became a follower to the Imperial Court. He visited Italy and attended in Bologna the Coronation of Charles V by Pope Clement VII. Following the Imperial Court, he was present at the Diet of Augsburg in 1530. While travelling with the Imperial Court he took advantage of the proximity of the Swiss Reformers to visit some of them. In spite of his early age—he was then only 19 years old—he was well received by Oecolampadius in Basle and tried to convince him on principles of theology. Oecolampadius, who was by then not far from 50, was surprised to find a youth who had, before 20 years of age, acquired such a good knowledge of Greek and Hebrew and perhaps even of Arabic, apart from the common Latin. Unfortunately, with a stubbornness almost reaching obsession, Servetus considered it imperative to convince the Reformer in matters referring to the Trinity.

In Hagenau in 1531 he published the little book *De Trinitatis Erroribus*, which he hoped would enlighten his opponents. Unfortunately, instead of convincing them he antagonized them all, for Servetus was now touching matters related to the basic foundations on which the Christian Church had been established since the Nicea Council. He seems to have feared the personal dangers which he incurred in taking such an extreme attitude, and published a second book called *Dialogorum de Trinitate libri duo*, which was meant to dispel some of the bad impressions he had made by his earlier publication. Nevertheless, his good purpose vanished soon after he began to take up the pen, and he produced a pamphlet as uncompromising as the first.

Work on Ptolemy's "Geography"

To avoid personal dangers he left Switzerland and Germany for France, and we find him in Lyons, where he began working as a corrector for the press with the brothers Trechsel, the famous publishers of the Renaissance, under the assumed name of Villanovanus. Soon they engaged him in annotating and preparing the re-edition of Ptolemy's *Geography* which appeared in 1535. This book is one of the earliest works, if not the earliest, on comparative geography, and a few examples will suffice to show its value despite the early date at which it was written.

*"Britain and Ireland"**

"The language of the English, drawn from many peoples, is very difficult to understand and to speak. In warfare they are intrepid, the best bowmen, very rich and much given to commerce and celebrated for their noble cloth because of the supply of good wool. In addition to other things, they cultivate music and have splendid banquets. Their eyes are blue, their faces somewhat ruddy and their stature tall. As St. Gregory said when by chance he saw English boys sold in Rome, alluding to the word for their native land, 'they are called Angles because their countenances shine like those of angels; they must be given the road to eternal salvation'; which was done as Bede says, in the year of the Lord 156, with Lucius, King of the Britons, seeking it by a letter from Pope Eleutherius, under the emperors Antonius and Commodus.

"The dress of the Scots is unusual in almost all respects, but they have almost the same language and same customs as the English. They are of quick intelligence, ferocious and prone to vengeance. They are brave in war, very enduring of hunger and lack of sleep, of pleasing stature, but very lacking in sophistication.

"Spain and its Contrast to France."

"The temperament of the Spaniards is hotter and dryer and their color dark; of the French, more cold and moist, the flesh softer and the color lighter. French women bear more children than the Spanish. The French are endowed with larger limbs, the Spanish are tougher and have a closely knit body. The French fight with more ferocity than skill and they wage war with more force than plan. The Spanish are the opposite."

"The French are more talkative, the Spanish more taciturn and accomplished in dissimulation. The French are vivacious, animated and prone to conviviality and shun completely hypocrisy and gravity which the dissembling Spaniards maintain. For the Spaniards in banquets are less sociable, more ceremonious, affecting a kind of seriousness which the French do not possess."

"Spanish is graver speech. French more suave. Among the Spanish the widespread Castilian people employ the most elegant speech; in France you will hardly distinguish what city speaks the true French since that is the speech of the nobility and the court more than it is peculiar to any particular place. Spanish is closer to Latin."

"The French would consider barbarous that custom of the Spanish women by which they pierce the lower portion of their ears with a gold or silver rod on which they frequently hang gems. They place about their waist a wooden girdle or some kind of instrument of torture so that with a broader appearance

*I am following the recent transcription in English made by O'Malley (1953).

they may seem more dignified, nor do they leave their homes except with an accompanying troop of servants preceding and following them; but the French women [live] simply, so that scarcely a single attendant accompanies them on foot. Also the Spanish women wear shoes, sometimes a foot, sometimes a foot and a half high, so that they appear to move about almost on towers. As in the case of the ancient Roman women, so the Spanish women are to be praised for their abstinence from wine but they are to be criticized because they make their faces hideous with eye-paste, minium and ceruse because their natural coloring is less than that of the French."

"If you desire to know the customs of these [French] men: of fiery mind, emotional, athirst for new things, quick, animated and inclined to conviviality. Juvenal considered the Gauls litigious, and today they hold this name because they are moved to litigation over very small matters, which is not the case with the Germans and Spaniards unless compelled. Whence I dare to affirm that there are more advocates, procurators and notaries in France alone than in ten Germanies and Spains."

Servetus's faculty of accurate observation is made patent when, referring to the King of France, he states it has been said "that the king himself by his touch cures those suffering from struma or scrofula. I myself have seen the king touch many attacked by this ailment but I have never seen any cured."

Activities in Paris

Before Ptolemy's *Geography* was published Servetus spent some time in Paris, and we have some information about his activities there. He had begun to be interested in medicine under the influence of Champier, the medical humanist of Lyons, who had edited the *Magnum Opus* of Arnald de Vilanova and was responsible for the preface to that important medical work. In Paris he studied at the Collège de Calvi and read anatomy, as is testified by Joannes Guinterus of Andernach.

While in Paris he wrote *In Leonardum Fuchsium Apologia*, which was printed in Lyons in 1536 with the preface of the book signed in Paris. This is important because it gives information about the time when Servetus was already interested in anatomy. He writes then as a devout Catholic against Luther's ideas on the justification by faith. The *Apologia* against Fuchs was written in support of the Lyons physician Symphorien Champier, probably his first teacher in medicine. It is worth noting that in this book Servetus exhibits an extensive knowledge of the classical medical writings of Hippocrates, Galen, Dioscorides, and Plinius. He also shows a substantial knowledge of Arabic medicine, in particular that of Avicenna, whom some believe he was able to read in its original Arabic language. In this new book he uses the same method he had previously employed in support of his ideas on the Trinity: when claiming he follows the original writings of the New Testament, what he really does is to interpret them as he thinks best.

In 1537 he published also in Paris *Syruporum Universa Ratio*. This is an extremely erudite work full of quotations from classic authors, in particular from Galen. As it has recently been denied that Servetus had anatomical training to justify his early discovery of the pulmonary circulation, I am interested in quoting here Servetus's words on his teacher Sylvius, "a man with sharp judgement and highly skilled in interpreting Galen, etc.," to show that before the end of 1537 Servetus was acquainted with Parisian anatomists. In the same books on the syrups he writes that Guinter of Andernach was a "very meticulous restorer of Galen and an outstanding physician," giving evidence that he already knew him then. Later in his life, when he was persecuted in Vienne for his heresy by the Inquisitor Mateus Ory—the same who also denounced St. Ignacius of Loyola—he said that he had studied anatomy with Sylvius, with Guinter of Andernach, and with Fernelius. It is then difficult to understand why O'Malley (1953) thinks that Servetus could not have been working in anatomy with Andernach until 1538, when Vesalius had already left Paris for more than a year. Surely the man who while in Paris wrote in 1535–6 the *Apologia* for Champier and in 1536–7 *Syruporum Universa Ratio*, and who had been in Paris at least since 1535, might have had more than one opportunity to meet Vesalius and even work with him in the anatomical departments of Sylvius and of Andernach. The latter has given evidence of the anatomical training of Servetus, as he places him side by side with Vesalius in his *Institutionum Anatomicarum . . . libri quatuor*, published in Basle in 1539. There he states that he had been most helpfully assisted in his dissection "first by the young Andrea Vesalius, extremely proficient in anatomy, and secondly by Michael Villanovanus, distinguished by his literary knowledge, which is in respect to Galen second to none."

In 1538 Servetus published in Paris *Apologetica disceptatio pro Astrologia*. He was then in the Collège des Lombards, where he was pursuing his medical studies. He became acquainted with a fellow student, Jean Perell, who was later to be personal physician to Pierre Palmier, Archbishop of Vienna in the Dauphiné, and who invited Servetus to follow him. Servetus dedicated to Palmier the second edition of Ptolemy's *Geography*, printed in Lyons in 1542. He probably met Archbishop Palmier in Paris; what is certain is that he was invited to join him in Vienne after having had serious trouble with the University of Paris for the publication of his pamphlet on astrology. For the moment Servetus went to Lyons, from there on to Avignon, and then back to Lyons; finally, he settled in Charlieu, about 40 miles from Lyons. There he practised medicine for about three years. Afterwards he went to live in Vienne as a physician attached to the household of the Archbishop, but he had time to publish an annotated Bible in 1541, to be followed by the second edition of Ptolemy's *Geography* in 1542. During this time he became a naturalized French subject.

Until 1553, when the thousand copies of *Christianismi Restitutio* were published in Vienne, he lived a quiet life, meditating and probably preparing the publication of the book in which for the first time the pulmonary circulation was to be described. Under the assumed name of Villanovanus he had maintained a correspondence with Calvin, then at Geneva, and to whom he sent the manuscript of his new book, *Christianismi Restitutio*. It seems that under the inspiration of Calvin and the mediation of one of his friends, the Catholic authorities of Vienne were advised on the publication of Servetus's book, and the great majority of the thousand copies were seized and its author cast into prison. He was accused of heresy and his trial began, but three days after its beginning, Servetus, with some help from outsiders, escaped from prison and directed his steps towards Italy. In crossing through Geneva on August 13 he was recognized and imprisoned, accused of heresy, and finally burned at the stake on October 27, 1553.

Description of the Pulmonary Circulation

In the book *Christianismi Restitutio*, from page 168 to page 173, the pulmonary circulation is described. It is interesting to gather from which source he had the insight to detect Galen's error on the circulation. It has recently been said by O'Malley that in Galen's anatomical writings he might have found all the elements necessary for the new conception, but this seems to me untenable. If the anatomical bases necessary for the new conception were known since Galen's time one must ask why then they had not been noted by any of the readers of Galen's works, including such careful anatomists as Eustachius, Sylvius, Andernach, and Vesalius. This would make Servetus a genius of unprecedented size. Apart from an unknown reference from the thirteenth-century Arabian writer Ibn-an-Nafis, it is not until Servetus describes the pulmonary circulation in 1553 that the concept of the circuit through the lungs enters into the anatomical works. It seems gratuitous to assume that Vesalius had himself in his first edition of the *Fabrica* doubted the existence of the blood flow as stated by Galen. What probably happened is that a heretic mentality like that of Servetus, who had worked with good anatomists and had dissected the human body in the same place where Vesalius worked, was surprised to find, as he mentions in his

description of the pulmonary circulation, several important facts which were not in accordance with Galen. Here thus his physiological "heresy."

These facts are as follows :

A. That there is no communication through the septum of the heart "as is commonly believed" (against Galen).

B. That the blood reaches the left ventricle from the right following a long track or lengthened passage ; that the blood mixes with air in the lungs (and not, as thought by Galen, in the heart).

C. That the pulmonary artery has a remarkable calibre, which would be much in excess of that required to provide only for the metabolic requirements of the lungs (no mention of this occurs in Galen).

D. That in the foetus until the time of birth the nutrition of the lungs is not dependent on the pulmonary arteries, because of the disposition of the "little membranes" of the heart. Servetus calls them *membranules* in one place and *vulvulae cordis* in another.

E. The great number of communications in the lungs between the pulmonary arteries and pulmonary veins. He calls anastomoses the channels of union between arteries and veins (Galen had seen them, but not in the lungs).

That revolutionary concept saw the light in printed form in 1553. The book had been seized and destroyed at Vienne, but we know that at least three copies have escaped and reached our time. One is in the Imperial Library in Vienna, the second is in the National Library in Paris, and the third is in the Advocates Library in Edinburgh. Apart from these three copies which have reached our time, we know of others which have now disappeared but have existed, as, for instance, the one that was kept in the Municipal Library of Vienne and which was destroyed by the fire in the Library in the eighteenth century. The distribution of Servetus's books in Poland and Hungary is a recognized fact, for several of Servetus's contemporary physicians and humanists of the North of Italy were well acquainted with his last work, among them Gribaldi, Curione, Blandrata, Massari, and probably Sambucus. Thus the discovery was not totally unnoticed by some of the physicians and anatomists, particularly those of Italy. That may explain why the Spaniard Juan Valverde, in his book of anatomy in Spanish, *Historia de la Composicion del Cuerpo Humano,* printed in 1556 in Rome, gives the second printed description of the circulation and follows almost exactly the original description by Servetus even if he does not mention him. It is true that Valverde attributes to himself and his teacher Columbus the discovery of the pulmonary circulation and insists that it had never been described and printed before. I think he was cautious in stressing his lack of knowledge of Servetus's book because 15 years later, when Caesalpinus published his description of the circulation in *Quaestionum Peripateticorum libri V,* he was imprisoned and accused of heresy, and was saved only by Pope Clement VIII, to whom he was private doctor.

In Columbus's book *De Re Anatomica,* published in Venice in 1559, a new description of the circulation appears, the third ever to be printed, and finally, in a second edition, this time in Italian, of Valverde's *Anatomia del Corpo Humano,* Rome, 1560, the fourth description saw the light following the original pattern of Servetus. It has been said that Columbus had already discovered the circulation some time before Servetus had printed his book, but even in this case the priority of Columbus cannot be claimed, because in a manuscript of Servetus's *Christianismi Restitutio* in the National Library in Paris, which was written in 1546, the description of the circulation is already present, antedating Columbus, if we accept Valverde's evidence, by at least eight years. I have already dealt with this subject more extensively elsewhere (Trueta, 1948).

The Personality of Servetus

Which of all these works and events can be given as featuring Servetus's personality and the character of his contributions ? It seems to me that what is notable of Servetus's life and contributions is his enormous curiosity, which brought him to inquire into all the subjects he touched undeterred by any dangers he might incur. In denying Calvin the right to impose upon him an intellectual subservience he assumed an attitude which is now characteristic of all the freedom-loving people of the West. He died, as so many have done after him, and are still doing in contemporary times, to remain true to himself. And to-day, four hundred years after his death, we should remember him, not only for what he contributed to the modern study of geography or for having been the initiator of a work which ended seventy years later by the discovery and demonstration of the general circulation of the blood by William Harvey, but for his passion to know the truth even if so frequently, like many other great men, he failed to find it.

Placing side by side the figure of Ramón y Cajal and that of Servetus, one is struck by more than one point of resemblance between these two great men, who were born less than one hundred miles from each other: more than anything by the unquenchable persistence of their will-power, their desire to penetrate into the unknown world and their lack of allegiance to established scientific creeds when they conflicted with their own findings. They were both the type of Spaniards who belong to Europe and have little in common with the picture of that fatalistic, unproductive Spaniard which some people think is almost outside the Western world.

The dictum that Pope Gregory VII wrote of himself nearly nine hundred years ago could be appropriately applied to Servetus : "I have loved justice and hated iniquity, therefore I die in exile."

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MEDICAL EDUCATION IN THE SOVIET UNION

BY

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Before the October revolution of 1917 there were in Russia 13 medical faculties and five medical schools for women, from which about 1,500 doctors qualified annually, after a five-year period of medical education. In 1917 the total number of doctors in Russia was about 20,000, and the overwhelming majority were in the towns and central regions of the country. The rural population was served by the "Zemstvo" medical organization on a regional basis, and there was only one doctor to many thousands of people. Because of the shortage of doctors, "feldshers" (medical auxiliaries) formed an integral part of the service. The outlying parts of the Russian Empire, Central Asia, Transcaucasia, and Siberia were even worse off. As is well known, from a sanitary and epidemiological standpoint the condition of the whole country was extremely unsatisfactory and this was reflected in the fact that the infant mortality was one of the highest in Europe.

After the October revolution the whole question of social reform, including medical services, was raised. From the first days of Soviet power the principle of a medical service free and freely available for all was accepted and, with the active participation of the public,

widespread prophylactic and sanitary measures and a comprehensive system of maternity and child welfare were introduced. All this made it necessary to increase the number of doctors. The doors of the medical faculties of the universities were flung open to working-class youth, and by 1922 the number of faculties had increased to 34.

Reorganization

Until 1930 the medical schools remained part of the universities and therefore of the educational system. In 1930 a law was passed on the reorganization of medicine in the U.S.S.R. in accordance with which the medical faculties were separated from the universities and reorganized as institutes under the Ministry of Health. This reform made it possible to adapt teaching methods to the needs of medical practice and unite medical schools with research institutes, which had always been part of the health services of the country. The experiment of organizing medical education as part of the health service has, in our opinion, fully justified itself in the course of nearly a quarter of a century.

The new organization of medical education, however, was not without faults. Theoretical teaching was accorded significantly less time than practical teaching, and lectures were no longer the principal factor in the training of doctors. The medical course had been reduced to from four to four and a half years. The 1934 law on medical education was designed to rectify these faults. A five-year course was established, and the balance between theoretical and practical studies was adjusted. Practical work was introduced for students after the end of the fourth year. The decree established different forms of training, as follows: therapeutic and prophylactic (later reorganized as therapeutic), sanitary and prophylactic (later called sanitary and hygienic), and maternity and child welfare (later paediatric). Appropriate proportions of students were allocated to the various faculties.

In 1934 the Government passed a resolution to set up dental institutes to give a four-year course, and also a system of higher dental qualifications. The first of these institutes was opened in 1935. In Tsarist Russia most dentists were trained in schools for medical auxiliaries, so that those treating the general population were without advanced training. A small number of doctors took up dentistry, but most of these were engaged in scientific work or attached to university chairs of dentistry.

Another new departure was the setting up of pharmaceutical institutes, also with a four-year course.

At the outbreak of war in 1941 all medical and pharmaceutical education was under the direction of the Ministry of Health. The number of students in these institutes had reached 115,000 and there was a marked improvement in the standard of qualifications. The achievements of Soviet medicine during the war years are known to all. At the same time the war revealed some weak features in the training of doctors, and as a result of this the Government reconsidered medical education in 1944, and established a six-year course in medical schools. This made it possible to increase the scope of general theoretical education as well as improving clinical training of future doctors.

In 1949 courses in dental and pharmaceutical institutes were prolonged to five years.

Training the Student

At the present time all medical students, irrespective of their future specialty, have the same training for the first two years, at the end of which is a semi-State examination to determine the student's suitability for further study. After this the training differs according to the specialty, as indicated above.

Entry to the medical, pharmaceutical, and dental institutes is by a competitive examination in Russian language and literature, physics, chemistry, and the elements of philosophy. The student who receives a gold or silver medal when he leaves secondary school is exempted from this examination. Some 26,000 students, about half of whom are women, enter the medical and pharmaceutical schools each year. Over 90% of those in the medical schools receive the State stipend, the only qualification for which is ability.

There are now in the U.S.S.R. 63 medical, four dental, and eight pharmaceutical institutes. Of the medical institutes, 37 have only one faculty—35 for training physicians and surgeons, one for paediatricians, and one for public health. The remainder have several faculties, including dental and pharmaceutical. The programme for dentists and pharmacists is the same in these faculties as in the independent institutes. The latter are set up where the number of students is sufficient.

After completing the course the student takes the appropriate State examination—that is, in medicine, surgery, paediatrics, public health, dentistry, or pharmacy. Successful candidates are entitled to be described as doctors, dentists, or pharmacists, and those who do particularly well get an honours diploma. The newly qualified doctors are assigned work which they have to do for three years under the supervision of the Ministry of Health.

We consider that the greatest achievement in medical education after the revolution has been the setting up of medical institutes in those outlying territories which were national minorities in the days of Tsarist Russia and are now national republics with equal rights. In all the vast expanse of Kazakhstan there was before the revolution only one medical institute and only about 100 doctors. Now in Soviet Kazakhstan there are three medical institutes and about 7,000 doctors. In Uzbekistan the Soviet Government has set up four medical institutes, and in Tadzhikistan the Avicenna medical institute has been created.

The problem of training national groups of doctors from the local indigenous population is very important in our multinational State. Readers will, of course, be aware of the importance of a knowledge of the language and of local customs in carrying out treatment and prophylaxis. Some republics which previously had no medical institutes—for example, Azerbaijan, Georgia, and Armenia—have now fully supplied themselves with doctors from the local population, and at present have more doctors per 1,000 of population than any other republic of the Soviet Union, not excluding the Russian Federation.

Training of Medical Teachers

In order to set up these institutes it was necessary for the health service to train professorial and teaching staff. For this the Soviet Union absorbed the experience of pre-revolutionary Russian medical schools and added new features. For hospital medical officers this training now consists of three years' work in the clinics of a medical institute, where, alongside of practical work, they take part in the research work of the professorial unit, and some doctors are able during this period to publish the results of scientific investigations. This three-year course qualifies the doctor as a specialist in some branch of the profession—for example, surgery; ear, nose, and throat work; ophthalmology; neurology; psychiatry. In 1953 the number completing such a course was 5,500. A State stipend equivalent to a doctor's salary is received during the course. The right of entry is enjoyed by those doctors who graduate with honours and by those who have completed their three years of practical work under the direction of the Ministry of Health.

There is a special postgraduate institute for the training of assistant professors and clinical directors. Entry to this is by open examination, which may be taken by recent medical graduates, doctors who have already been in practice, and doctors who have just completed their three-year postgraduate course. The doctor spends three years at the postgraduate institute, during which time he must not only acquire a minimum of knowledge necessary for his teaching, but must also carry out research and defend in public

a thesis for the degree of Candidate of Science. During the course the doctor studies not only his chosen specialty but also related subjects. He receives a State stipend for the three years. As a result of many years' experience it appears to us that the work of the postgraduate institute has justified itself.

In order to train professors from among the more able assistants and lecturers an institute for doctorates has been set up, with a two- to three-year course. Whilst engaged in this the candidate must prepare and be ready to defend publicly his thesis for an M.D. degree. During the whole period he receives a salary according to his previous post—that is, as an assistant or lecturer.

In colleges of the Soviet Union there are the following scientific titles: the assistant, who helps the professor in teaching and carries out practical work with the students; the lecturer (dotsent), who together with the professor may conduct an independent course or work under the direction of the professor, co-ordinating the work of professorial assistants; and the professor, who heads the unit. The title of assistant is awarded by secret ballot of the scientific committee of the institute. The title of lecturer or professor is awarded by a special high ministerial commission after selection by the scientific committee of the institute by secret ballot. These titles are retained for life. In order to be chosen for the post of lecturer the degree of Candidate of Medical Science is essential, and for that of professor the degree of Doctor of Medical Science is needed.

A great achievement has been the training of professorial and teaching groups from among the natives of the national republics. This has made it possible, in the Transcaucasian Republics, Azerbaijan, Georgia, and Armenia, to change over to teaching in the language of the particular republic in the medical schools.

The medical, dental, and pharmaceutical institutes are as a rule under the charge of the ministries of health of the local republics, and only a few are the direct responsibility of the All Union Ministry of Health. The latter is, however, responsible for the central direction of medical teaching, and, whether or not a particular institute is directly controlled by it, the All Union Ministry of Health has to approve the curriculum and textbooks. This ensures uniformity in the training of specialists.

Specialization

In the Soviet Union there is a State system for specialization and the improvement of medical qualifications. In the first stage, for those doctors who have not previously received training in one of the specialties, the general practitioner is sent for a period of four to six months to specialized clinics and hospitals at the expense of the Government.

The second stage is provided for by 11 institutes for raising medical qualifications. These establishments, situated in Moscow, Leningrad, Tbilisi, Tashkent, Kazan, Stalino, etc., are institutes of higher education with clinical and theoretical professorial units. Over 16,000 doctors enter these institutes every year for courses of from three to nine months. About one-fifth attend for a course in primary specialization, and the remaining four-fifths are doctors who have already specialized and wish to have higher qualifications.

While they are in the institute for raising medical qualifications doctors attend lectures illustrating recent advances in medical science, undertake clinical consultations, and attend and take an active part in scientific conferences. This gives the doctor the opportunity to enlarge his theoretical horizon as well as acquire the necessary practical skill. The right to enter these institutes is enjoyed by any doctor who has spent three years in rural practice or five years in urban practice. During his course at the institute he receives his normal salary plus a supplementary State stipend.

The third stage in the training of specialists is to attend the three-year course for hospital medical officers mentioned in connexion with the training of teachers.

Medical Auxiliaries

The growth of the health service has demanded the training of a large number of medical auxiliaries: nurses, "feldshers," dispensers, midwives, etc. There are now some 600 schools for this in the U.S.S.R., and the scope of training is so great in comparison with the pre-revolutionary period that there is no point in quoting figures. The schools for nurses are the most numerous and give a two-year course. For paediatric nurses, midwives, "feldshers," dental assistants, and dispensers there are three-year schools. Finally there is the four-year school for training the feldsher-midwife. The right to enter these schools, except that for dental assistants, is enjoyed by those who have had an incomplete secondary education (seven years). The dental schools take only those students who have a certificate showing that they have completed the 10-year secondary education.

A reform of this system of education of medical auxiliaries has now been prepared. All the schools will have the same length of courses, three years for students who have not completed secondary education and two years for those who have. In addition to the already mentioned auxiliaries the schools will train sanitary feldshers, feldsher laboratory technicians, female feldshers to work in children's establishments, and dental technicians. Finally, with the new academic year the schools for assistant dentists will be closed and additional dental faculties set up, so that in future dental treatment will be carried out only by fully qualified dentists.

The Soviet Government pays great attention to medical education, since the satisfactory solution of the problem of training ultimately determines the success of all the work of the health service.

GENERAL PRACTICE: NEED FOR HOSPITAL TECHNIQUE IN THE HOME

BY

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In the last few years there has grown up a critical attitude to medical undergraduate education in respect of the applicability of that education to the needs of the general practitioner. It is being said in many quarters[1 2 3] that the medical curriculum is lacking in education for general practice because university teachers have not themselves got the background from which such education formerly came. The corollary to this is the claim[2 4] put forward for general practitioners of good standing that they should be assigned a part in the education of their younger colleagues of the future. In one or two schools this is already being done, but it is clear that the claim is by no means generally admitted. Before such admission can be expected, a reasoned case must be stated for these two contentions—that the undergraduate is not being educated for general practice and that G.P.s themselves should be given that responsibility. As an approach to the answer to these questions this one may be put: At what point or by what process did undergraduate education cease to provide, if indeed it ever did specifically provide, for the needs of general practice?[5] In default of a convincing answer the case falls.

A Time of Change

In the three broad regions of surgery, medicine, and midwifery let me take the last first. Forty years ago the teaching

of midwifery envisaged the practice of domiciliary obstetrics on a wide scale, and it is likely that, with the exception of recognized emergencies of that practice, the normal limit the G.P. set to his own powers was "failed forceps." At this point the teaching of midwifery began to change—not to get away from the G.P., but to emphasize a different set of standards for him to follow. That lesson should not be lost sight of when we examine undergraduate teaching in its relation to general practice to-day.

By this same period, forty years ago, the disappearance of the general-practitioner surgeon had set in, and the first world war and its lessons started surgery on its division into special branches. Orthopaedics and peripheral nerve surgery were still together, and a number of years were to elapse before each took its own identity. Thoracic surgery had been advanced by the serious mortality from chest wounds, and the next years saw surgical practice and teaching taken over entirely by pure surgeons—general surgeons with or without a special aptitude and interest in one or another region. From this the undergraduate had to assimilate a great quantity of surgical teaching which he was not, if he became a G.P., going to practise. But let this be marked: he could, if he entered practice, still call the surgeon to the patient's home, where, whatever the deference paid to the specialist opinion, the deference to respective positions *vis à vis* the family was, as it still is, ethically in the reverse direction. Moreover, if private nursing-home or operation were decided on, he could still elect to administer an anaesthetic, and the requirements of a surgeon at different stages of an operation were very much part of the knowledge demanded of him. Further, quite frequently the G.P. was responsible for the post-operative care of his patient, so that at this stage it still seems the teaching of surgery was thoroughly germane to the needs of the family doctor.

The need for a uniform standard of antenatal care of women had produced the antenatal clinic. The need of the surgeon for a uniform level of skill in ever-changing methods of anaesthesia produced the anaesthetist. The anaesthetist displaced the family doctor in pre-operative measures, at the theatre table, and in such post-operative care as did not clearly fall within the surgical province. Surgery was strengthening its bond with anaesthesia but was relaxing its ties with ordinary general practice.

By and large, I think the G.P. of the past was more dependent on his teachers of medicine than on the other two broad divisions of his training. It used to be taught that if a patient with pneumonia were not transferred to hospital on the first day of illness he should not be transferred at all, and that his chances of survival from transfer on the fourth day were less than his chances if left at home in the hands of his own doctor. That was a measure of rapprochement between the hospital and the G.P. that we should ponder.

Advances in surgery after the first world war were not perhaps paralleled in medicine. But since the last war medicine has made advances as far-reaching as any. But these have not been self-limited to the medical field. The impact of surgery on the treatment of heart disease and the "medical" diseases of the lungs, the increasing complexity with which haematological research has invested the anaemias, the advances in biochemistry made possible by the polythene catheter, the artificial kidney, and the potentialities of the heart–lung mechanism—it cannot be gainsaid that these developments must result in an orientation of hospital departments towards one another and away from the humdrum, emergencies and all, of general domiciliary practice.

The former liaison between the medical teacher and general practice was derived from the teacher's personal identification with domiciliary practice, either as a consultant or as a family doctor. He knew general practice from experience. He knew that the practitioner must base his diagnosis on an appraisal of symptoms and the detection of physical signs, on the evidence of his own unaided faculties, on his knowledge of the facets of family life, the emotional sidelights so easily dimmed when a sick person comes into a hospital ward. But there is more to it than that. As recently as forty years ago the hospital physician took with him his own judgment and his own methods of bedside investigation—just those very things on which he was still mainly dependent even in his hospital work. There was nothing, even in the hospital, like the ancillary armament of investigation and treatment now available. In other words, the skill and resources of the hospital of 40 or 50 years ago were taken to the home, in the person and personality of the consultant, in a far truer sense than they are to-day.

Hospital practice has undergone something of a revolution. In general practice the manufacturing chemists have pushed themselves to the front of the advance in therapeutics, but in too many cases diagnosis is still "waiting on a bed." I believe that general practice could be brought nearer to hospital developments by taking the diagnostic facilities of the hospital to the patient. Before examining that suggestion I would like to return to the second proposition with which I set out.

The G.P. and Undergraduate Training

The part which the G.P. might be asked to take in undergraduate education is not agreed, and an open mind[2 3] should be kept. I am quite sure that nothing but good could come of a student being given opportunities of contact with sound general practice. In the atmosphere of general practice, and perhaps only there, he will see threads drawn together of which he only sees the individual ends in hospital class-rooms and practice. But, on the other hand, he cannot, as an undergraduate under any circumstances, be trained to the point of entry into general practice any more than to the assumption, on graduation, of the duties of a registrar.

Undergraduate training must aim at a sound general medical education without foreknowledge of the ultimate sphere in which any student is going to practise. It is therefore right that at some point a G.P.'s view should be given him, just as at present the hospital surgeon or physician's view is perhaps emphasized. It has been suggested that the G.P. might attend at the hospital when his patient is being "shown" and might put the general-practitioner aspect of the case to a class. But I think we ought to recognize that, so far, that is not the purpose of the patient's presence in hospital, in spite of the fact that a "good teaching case" may get in more readily than another. But, apart from such a consideration, it is doubtful if the G.P. angle can be brought to bear on the presentation of a "case" at all. The alternative is the attachment of students, to such G.P.s as are willing, for short spells during vacations, to go round and see patients with the doctor and to sit as an observer under instruction at surgery hours.

Examination Facilities

There is a third way. Ever since the advent of the National Health Service it has been urged that G.P.s should have direct access to ancillary examination facilities in the hospitals.[4 7] Not very much has been done to bring it about. It is possible to believe that throwing open these facilities to general practice might contribute to a scamping of that extra care in physical examination that should be, but is not, *every* family doctor's aim, and would transfer the load to the diagnostic departments of the hospitals. Provided, however, that the sound practitioner has given his patient a proper physical examination, he is quite capable of deciding, in this or that case, that he needs the help of hospital resources. It is at this point just now that his patient gets on to a waiting-list for appointment or investigation. We should therefore examine the practicability of taking the hospital to the patient—in other words, of cutting down the waiting-time for admission and in many cases cutting

out the need for admission at all by making ancillary investigation available in the patient's home.

The portable *x*-ray apparatus and electrocardiograph are already in use in people's homes, but a much wider range of investigation in domiciliary surroundings should be practicable, although the actual examination of specimens obtained must be done in the hospital laboratory. The range I suggest, including what is already being done, takes in:

Cardiovascular system: electrocardiograph; *x*-ray apparatus.
Respiratory system: bacteriology and cytology of sputum; *x*-ray apparatus.
Digestive system: fractional test meal; benzidine test.
Genito-urinary system: kidney function—for example, urea concentration and clearance.
Nervous system: lumbar puncture for full C.S.F. examination.
Haematological: Wintrobe tube blood sample; sternal marrow puncture.
Metabolic: blood-sugar curves; liver function; other serum and blood chemistry.

For some of these investigations the specimens required might be obtained by the family doctor himself, but the provision of a perfectly dry syringe has long been one of the simple snags in general practice,[8] and such a provision from the hospital would be asked for in serum and blood chemistry examination.

From the hospital and/or laboratory aspect there might be a little hesitancy in giving a *carte-blanche* reliance to specimens so obtained. The answer to that would be the mobile team from the hospital, consisting perhaps of a registrar and a postgraduate or a final-year student. In addition to necessary instruments such as needles and syringes, specimen tubes, and the like, small sterile packets might be required. Full co-operation from the practitioner would be essential. He would have to be present at the house throughout the visit of the mobile team, and the most suitable time of day for such a team would depend on hospital requirements. I am not in a position to carry the examination of this suggestion further at the moment, so far as the hospital angle is concerned. I think the first approach might have to take in only a limited number of practices, but I confidently believe that it would make for better diagnosis in the home, for less demand on occupied beds for investigation in the hospital, and for the effective introduction of the undergraduate and pre-registration postgraduate to the atmosphere and circumstances of general practice.

If something near such a scheme of diagnosis in the home can be realized, then it brings in another picture. There is nothing to be gained by the G.P. criticizing the teaching of medicine while the teacher criticizes the standard of general practice. Long-range sniping is not the answer to the need for a close partnership. If the home can accommodate the diagnostic methods of the hospital, then it is surely on the way to the benefit of a wider range of domiciliary treatment. It is on such lines that general practice in this country will again set a standard for the rest of the world. Britain in the past was called a nation of shopkeepers, but something must be done to stay its march on the road to being a nation of hospitals.

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THE ENROLMENT IN MEDICINE

The total number of names in the *Medical Register* on January 1, 1954, was 83,090. Of this number, 73,003 were on the lists of England, Scotland, and Ireland; 8,289 on the Commonwealth List; and 1,798 on the Foreign List. The number is higher by 4,399 than the average of the last ten years, but it is lower than for the preceding year, because of the enormous decline in the number added by registration following the requirement of the Medical Act, 1950, that full registration for a newly qualified person must be delayed until he has served as a house officer for a period (one year) prescribed by the regulations of the General Medical Council. The number of persons provisionally registered in 1953 under section 6 of the new Act was 1,817; in all but 50 of these the provisional registration was on the English, Scottish, or Irish list.

Twenty years ago the total number on the *Register* was 57,496, so that it has increased by almost half as much again in two decades. As for removals from the *Register* it is worthy of note that the number removed by penal erasure (only two in 1953) has averaged just under three a year over the last seven years, whereas during the previous seven years, 1940–6, it averaged almost 10.

The following table gives the position on the *Register* at the end of each of the last ten years:

Year	Added by Registration	Added by Restoration	Death or Removal	Total
1944	2,971	11	1,218	73,646
1945	2,666	11	1,190	75,133
1946	2,237	14	1,092	76,292
1947	2,787	10	1,160	77,929
1948	3,968	16	5,621	76,292
1949	3,109	19	1,280	78,140
1950	3,160	45	1,123	80,222
1951	3,075	29	1,070	82,256
1952	4,493	46	2,881	83,914
1953	507	99	1,430	83,090

The high removal figures for 1948 were due to removals from the temporary list following the passage of the Medical Practitioners and Pharmacists Act of the previous year.

The Student Entry

The total number of students beginning the medical curriculum proper during the year 1953–4 is estimated at 2,512. During the early years of this century, up to the time of the first world war, the annual entry of students was about 1,400.

The training of medical students is shared between the teaching hospitals and the universities. In London the 12 undergraduate teaching hospitals, and in England and Wales, apart from London, the 10 teaching-hospital centres in association with the universities, have been designated as teaching centres. In Scotland hospitals are not designated as teaching hospitals; all of them come under the jurisdiction of the five regional hospital boards, but provision is made for inclusion on the boards of management of nominees of the university on which the region is centred. In Northern Ireland the duty is laid upon the hospitals authority—a body corporate—to provide the Queen's University, Belfast, with adequate facilities for medical teaching.

Results of Examinations

The results of the examinations held in 1953 for qualifications admitting primarily to the *Register* show that taking all three subjects—medicine, surgery, and midwifery—the passes in the finals as a whole numbered 1,801 and the rejections 1,078. The highest percentage of passes in medicine was in the University of Wales (93), in surgery in the University of Manchester (92), and in midwifery in the University of Dublin (89).

In the examinations in anatomy and physiology held in 1953 the highest percentage of passes was in the examinations at Sheffield University (92 and 84 in these two subjects respectively).

Taking the licensing body with the largest number of entries—namely, the University of London—the following

are the numbers of passes and rejections in all the various subjects of examination for qualifications primarily admitting to the *Register*:

London University

	Passes	Rejections		Passes	Rejections
Physics	300	108	Pharmacology, therapeutics	703	200
Chemistry	261	121	Pathology	666	91
Biology	397	148	Medicine	713	190
Anatomy	665	215	Midwifery and gynaecology	669	264
Physiology	664	216	Surgery	699	170
Materia medica and pharmacy	623	461			

Final (qualifying) examination as a whole: passes 390; rejections 347.

Fees for Registration

The fees payable to the General Medical Council for registration under the Medical Acts are £5 5s. on provisional registration, and on full registration in the case of a person already provisionally registered, £6 6s., or in the case of any other person £11 11s.

The address of the General Medical Council is 44, Hallam Street, London, W.1.

UNDERGRADUATE EDUCATION

"Men and women are liberally educated to the degree that they are literate and articulate in verbal discourse, in the language of the arts, in the symbolic language of science, informed concerning their social and spiritual environment, and concerning their relationship thereto as individuals; sensitive to all the values that endow life with meaning and significance, and able to understand the present in the perspective of the past and the future, and to decide and act as responsible moral beings."—*From a Report to the Commission on Liberal Education of the Association of American Colleges, 1943.*

"Nothing is more estimable than a physician who, having studied nature from his youth, knows the properties of the human body, the diseases which assail it, the remedies which will benefit it, exercises his art with caution, and pays equal attention to the rich and poor."—VOLTAIRE.

The new procedure for registration under the Medical Act, 1950, of which there has now been a full year's experience, seems to have operated smoothly. Some of the deans of the medical schools do not even mention it in recounting the events of the year, and those who do, declare that no real difficulties have been reported by newly qualified graduates in obtaining suitable house officer positions. This is stated by the deans of the schools in the Universities of Durham and of Birmingham, and the latter adds that the satisfactory result is largely due to the admirable co-operation of the authorities of the teaching hospital and the Regional Hospital Board. From Sheffield, too, comes the statement that as regards the compulsory year of house-post service, so far as is known no Sheffield graduate appears to have suffered from any of the delay, and even hardship, which have been spoken of in certain quarters in relation to the securing of suitable posts.

The story is the same in London. The dean of the London Hospital Medical College says that the first year of pre-registration house appointments has passed without any significant difficulty. The number of designated appointments, both in the teaching hospital and in the North-east Metropolitan Region, has been increased. There has been no difficulty in the way of newly qualified graduates getting a pre-registration appointment.

The scheme whereby some senior students are attached to selected general practitioners for a fortnight appears to be growing in popularity. In Birmingham it is said to have been a great success. A general report on the provision of such opportunities by the medical schools of Great Britain was prepared by a Birmingham student and attracted a good deal of attention at the First World Conference on Medical Education last year. At Liverpool preliminary steps have been taken, with the co-operation of the local branch of the College of General Practitioners, to introduce such a scheme for students in their final year in order that they may learn at first hand something of general practice. The scheme is voluntary on the part of both the student and the practitioner. At the Royal Free Hospital School of Medicine it is stated that the success of the fortnight's voluntary training has been ensured by the enthusiastic co-operation of general practitioners, and its value fully proved by the first year's work. At Edinburgh the requirement that senior students shall work for a period in the general practice teaching unit of the University is an important feature of the M.B., Ch.B. curriculum. Instruction is given in diagnosis and treatment appropriate to general practice, and patients are seen in their homes as well as in the consulting-rooms of the unit.

International Exchanges

The international exchange of students is a popular feature in some schools. At Birmingham an exchange of visits with students of the University of Lyons has continued, and has now been extended to Germany. During the present long vacation three senior clinical students are visiting the Free University of Berlin for four weeks. At the Medical School at King's College, Newcastle-upon-Tyne, a number of Norwegian students from Oslo were welcomed during the summer and given the opportunity of attending teaching practice in the hospital and of seeing centres of interest in the area as guests of the Medical Students Union, and a party of students from Newcastle visited the Oslo medical school and hospitals in Bergen in August as part of the Norwegian student exchange scheme.

At King's College Hospital, London, a registrar exchange scheme with the University of Toronto has been successfully completed. A senior orthopaedic registrar at King's has spent six months in Toronto, and in exchange King's has accommodated a Toronto graduate. In September a senior registrar in paediatrics at King's will go to Toronto, and in January a graduate from Toronto will come to King's to study ophthalmology. There is also interchange at teaching level. In the Sheffield Faculty of Medicine during last session the visiting senior lecturer in bacteriology was Dr. Irving Gordon, of the New York State Department of Health, Albany, and during the new session a house officer from Sheffield, who took his M.B., Ch.B. this year, will spend his pre-registration year in Albany, while another Albany doctor will occupy house posts in the United Sheffield Hospitals.

Below are some notes concerning individual medical schools.

LONDON MEDICAL SCHOOLS

At the *London Hospital Medical College* during the past year the number of applications for entry has remained high. Application can be made at any time after reaching the age of 16 or passing the general certificate of education at ordinary level, whichever is the earlier. Applicants are interviewed as soon as possible after receipt of the application form and are informed of the result of the interview within a few days. This policy is still proving of value, as applicants are not left in uncertainty about their chances of obtaining a place in the school. Applicants who are unable to obtain first M.B. exemption at school spend one year at Queen Mary College, but the number who need do this steadily decreases. Entry into Queen Mary College for first M.B. work necessitates University entrance and Faculty of Medicine requirements, but application to go there should be made through the Medical College.

Integration of Curriculum at the London

Further integration of the curriculum in the preclinical period has been introduced at the London Hospital Medical College during the past year, with a consequent reduction in the amount of time spent on anatomy and physiology. This time has been used to institute lectures which will form a bridge between preclinical and clinical studies. It is the aim of the College to pursue this form of integration, including a closer association of anatomy and histology with

pathology. The teaching of biochemistry is now at all stages the responsibility of the professor in that subject.

The departments of physiology and of anatomy now regularly run B.Sc. (special) courses in physiology and anatomy, and scholarships are given as a result of the second M.B. examination to enable suitable candidates to take part in these courses. There is no doubt that these senior studies leading to the B.Sc. degree are of great value to students in their future careers.

Research facilities continue to expand in both the preclinical and the clinical field. New laboratories for clinical research under the direction of the medical and surgical units have been opened and are proving to be of great value. They have a close association with the newly established professorial departments of biochemistry and experimental biochemistry, ensuring that the highest standard of chemical advice will be available to workers in the clinical field. Junior research fellowships have been established by the College, the tenure of which is normally one year, to enable graduates who have done their house appointments to gain experience in and have opportunities for original research under supervision. The Central Medical Recruitment Committee has co-operated in this new venture by enabling the holder of a junior research fellowship to obtain deferment of national service where necessary.

Extensions and Reconstructions

At the *Royal Free Hospital School of Medicine* the conversion of rooms left empty in the old building in Hunter Street on the transfer of departments to the new preclinical block has been completed. It has provided a stack-room for the library, a council and committee room, a large senior common room, and additional offices. At the Royal Free Hospital the whole of the obstetrical and gynaecological department has now been transferred to the Liverpool Road hospital, and a total of 70 beds is available on one site. The newly completed unit was formally opened by H.R.H. the Duchess of Gloucester in June. During the year a trust fund of some £12,000 has been created by Dr. E. M. S. Mecredy, an old student of the School, the income of which will become available for the benefit of women students. The Students Union has covenanted for seven years to provide funds for a scholarship of the value of £60 a year.

In the final M.B., B.S. examinations in October and April honours were gained by six students of the Royal Free, two having double honours and one being awarded the University Gold Medal. In all, 59 students have qualified during the year.

St. George's Hospital Medical School has for some time submitted to the handicap of cramped and inconvenient premises on the assumption that rebuilding was imminent. When it became obvious that no such project would be completed for at least a decade the School, with the help of the University of London, embarked on a plan of reconstruction at Hyde Park Corner. The administrative offices and students' refectory and club moved to larger premises in Knightsbridge adjoining the School, while the old buildings were converted for the use of the department of pathology. The School, therefore, has a first-class building with adequate space to house the teaching and research of this department. Increased facilities for clinical teaching are still needed, but there is hope of an improvement in the reasonably near future. In the meantime, by rigidly restricting the entry to 45 students a year, it is possible to maintain the St. George's tradition of personal instruction to small classes at the bedside.

University College Hospital Medical School has had the advantage during the past year of benefactions which have improved the teaching and recreational facilities available for its students. With the aid of a generous bequest from the late Mr. Rowland Ward a hall and lecture-room has been equipped at St. Pancras Hospital—the associated hospital—which is being used as a demonstration theatre for the introductory clinical course and as a centre for recreational activities.

At *Guy's Hospital Medical School* the first three years of preclinical studies are designed to prepare the student for the clinical work which will follow, and particularly for the eventual practice of medicine. There is at Guy's a close link between the medical departments and the wards. Oxford and Cambridge students are admitted for the three clinical years. The aim has always been to encourage responsibility from the moment the student enters on ward work. A three-monthly series of clerkships is arranged in the general wards and in special departments, so that students accept supervised responsibility for patients, and the emphasis is on bedside and out-patient teaching rather than on organized lectures. There are, however, lectures and demonstrations organized by the directors of the departments of medicine, surgery, obstetrics, paediatrics, and anaesthetics to cover the whole curriculum. Pre-registration appointments are available for the newly qualified.

New Teaching Wards at King's College Hospital

King's College Hospital Medical School provides the clinical training for students reading for the degrees of London, Oxford, and Cambridge. The hospital is fortunate in being in the centre of a large residential area, and has one of the busiest out-patient departments in London. The preclinical subjects are taught in the Faculty of Medical Science, King's College, Strand, where students are admitted either for the first or the second M.B. course. At the College students have the advantage of a full college life and of association with students of all the faculties. In May of this year the Medical School obtained the use of eight wards in Dulwich Hospital for undergraduate teaching. The use of these 200 beds has been achieved by a scheme of association between the Medical School and the South-east Metropolitan Regional Hospital Board. It has the full approval of the University of London and of the Minister of Health, who has made a special grant of £30,000 to the Regional Board for 1954–5, earmarked for this purpose. Three medical, two surgical, and three obstetric wards have been put at the disposal of the Medical School, and, in addition, some of the gynaecological beds will be available for teaching purposes. The teaching will be undertaken by the consultants from King's College Hospital and by some of the consultants already on the staff of Dulwich Hospital. The Camberwell Hospitals Management Committee is recruiting more nurses to cover the extra demands of teaching beds, and efforts are being made to accommodate 1,200 maternity cases, an increase on the 900 accommodated last year. Medical students will spend a period in residence at Dulwich Hospital as part of their midwifery training. Some of them will also live in for a short time at St. Giles' Hospital, Camberwell, and at St. Alfege's Hospital, Greenwich.

Additional registrars and resident medical officers have been appointed to Dulwich Hospital to help to meet the extra demands of undergraduate teaching. The use of these beds will considerably widen the clinical experience of the students, and a rearrangement of the curriculum permits the introduction of more general medical teaching, as ward rounds will be undertaken at Dulwich Hospital as well as at King's College Hospital, and every student will be taught by three consultant physicians instead of two. To help to co-ordinate the teaching at the two centres full-time tutors have been appointed in medicine and surgery.

The new suite of eight research rooms in King's College Hospital is now in full operation. Dr. F. L. Jackson has been appointed to the first Cowburn Research Fellowship, and a new Miles-Ames Research Fellowship has been established in the Medical School for research in the field of endocrinology. Dr. N. J. Holness has been appointed the first Fellow, and he will start in September.

During the twelve months to May, 1954, 49 students from King's College Hospital gained qualifying degrees in medicine in the Universities of London, Oxford, and Cambridge, and 40 students obtained the diplomas of the Conjoint Board. Eight students qualified with degrees (one with honours) and 25 with diplomas in dental surgery.

St. Mary's Centenary

Arrangements are proceeding at *St. Mary's Hospital Medical School* to utilize the beds of the various constituent hospitals—a total of over 800—for teaching purposes. Clinical teaching also takes place at Paddington General Hospital, where 120 medical beds and 75 surgical beds are in use. The facilities at this hospital continue to provide the students with excellent clinical material, most of which is very suitable for undergraduate teaching. The alteration of nine houses in Sussex Gardens to provide residential accommodation for 85 students is nearing completion, and the hostel will be open at the beginning of the new session. This first part will be reserved for clinical students, who gain more benefit from being within easy reach of the hospital. It is hoped that work on the second stage may begin early next year to provide rooms for an additional 89 students, and when the work is completed preclinical students also will be accommodated.

Professor W. D. Newcomb, who has been head of the department of morbid anatomy, is due to retire at the end of the session, and is to be succeeded by Dr. D. M. Pryce, who has worked in the department since 1933 and was appointed a reader of the University of London in 1949. Dr. G. Roche Lynch, who has been head of the department of chemical pathology since 1926, is due to retire at the same time. The University has approved the institution of a chair of chemical pathology, and it is expected that an appointment to that chair will be made shortly.

Active preparations are being made to celebrate the centenary of St. Mary's Hospital Medical School. A centenary dinner is to be held on September 25.

High Application Rates at the Middlesex

There have been no major developments at *Middlesex Hospital Medical School* during the past 12 months. The number of applicants for admission remains high and is still far in excess of the number of vacancies available at all stages of the curriculum. Students are admitted to do the whole course, commencing with instruction in chemistry, physics, and biology for the first M.B., or can come direct to the second M.B. departments if they have gained exemption from the first M.B. externally. Students from Oxford and Cambridge are also admitted twice in each year, in October or April, for the clinical course. Preclinical students start only in October. Candidates for admission to the School are advised to make application 18 months to two years in advance of the date at which entry is required.

The School authorities have always aimed at close co-ordination in the teaching, and this is carried through from the preclinical to the clinical stages, and so the student is well equipped for the practice of medicine and also to take full advantage of any new knowledge which research may bring to light. There are a number of house appointments available within the hospital which are recognized for provisional registration purposes and are open to students on qualification, in addition to the more senior posts open to those who have completed a full year's provisional registration appointments.

The past year has seen no outstanding changes at *St. Thomas's Hospital Medical School*. The shortage of lecture theatres has been relieved by the addition of two new temporary ones. Planning for reconstruction on the existing site is proceeding. The post-war era has seen considerable expansion of the teaching staff; this has given the members more time for research, so that the demand for increased accommodation is unceasing. The financial burden has been much lightened by generous help from the Hospital Endowment Fund. The department of chemical pathology has now a professor at its head, and a new holder of the chair of surgery has been appointed. The report from the School adds: "Existing economic conditions prevent many doctors from retiring, so partnerships and practices are never easy to find by the postgraduates, and good house-physician appointments are invariably heavily oversubscribed."

Charing Cross Hospital was the first of the London teaching hospitals to be established with a medical school as an integral part of the institution. With the associated hospitals of Harrow, Mount Vernon, and Wembley, the School has a service of 675 beds, a number more than sufficient to provide every student, on qualification, with the pre-registration house posts for one year required by the Act of 1950. All house officers are elected for a period of six months, reside in hospital, where they are provided with free board and laundry, and receive salaries. A notable feature of the School is the pathological museum.

At *Westminster Hospital Medical School* the number of clinical students is 202, of whom 14 are women, and 64 students are doing their preclinical studies at King's College with a view to entering Westminster for the clinical period. Some 500 applications were received last year for an annual entry of 65. The Westminster Hospital teaching group comprises Westminster Hospital, with 430 beds, in which clinical practice in general medicine, surgery, and obstetrics is undertaken; the Gordon Hospital, with 100 surgical beds; the Westminster Children's Hospital, with 120 beds providing full facilities for instruction in paediatrics; and All Saints' Hospital, with 50 beds for the practice of gynaecology and urology. A close affiliation with St. Stephen's Hospital provides very valuable additional clinical experience in medicine. Practical midwifery is also carried out at St. Stephen's and at the Nelson Hospital. Instruction in fevers is given at the Western Hospital, Fulham. Students also continue to visit the surgeries of general practitioners. Special instruction in tuberculosis is provided by a fortnight's residence at the King Edward VII Sanatorium, Midhurst. Instruction in mental diseases is given at Springfield and Netherne Hospitals. Forty vacancies a year in the Westminster Hospital teaching group have been recommended for pre-registration posts, and competition for these is keen. This year a new sports ground and pavilion has been opened adjacent to Cobham station.

St. Bartholomew's Hospital Medical College is divided into two parts. The preclinical departments are in the College grounds in Charterhouse Square, and the clinical departments are in the hospital in West Smithfield. Normally each department has its own laboratories and lecture theatres, but pending the entire replacement of buildings which were lost in the war some departments have had to share laboratories. There are four lecture theatres and a hall of residence with 100 study-bedrooms. Scholarships and prizes to the value of over £2,000 are awarded annually, and over 100 hospital appointments are available each year to students who have passed their qualifying examination. St. Bartholomew's Hospital has 772 beds, including those at the associated Alexandra Hospital at Luton.

OXFORD AND CAMBRIDGE ENTRY

Oxford University Medical School

The number of preclinical students admitted at Oxford each year is 76 (65 men, 11 women). After a minimum of three years' tuition in preclinical subjects, during which time they are members of one of the collegiate or non-collegiate societies, and therefore mix freely with students in other faculties, the students proceed to their clinical work either at the United Oxford Hospitals or at one of the teaching hospitals in London or elsewhere. It was not until the outbreak of the last war, with its disruption of clinical teaching in London, that a full clinical school was established at the Radcliffe Infirmary. This development followed the generous benefactions of Lord Nuffield in 1936 by means of which professorial chairs in medicine, surgery, obstetrics and gynaecology, anaesthetics, and orthopaedic surgery were established and the hospital accommodation in Oxford was greatly extended. At the present time the United Oxford Hospitals (Radcliffe Infirmary, Churchill Hospital, Oxford Eye Hospital, Slade Hospital for Infectious Diseases, the Osler Pavilion, the Cold Arbour Hospital, and the Cowley Road Hospital) comprise about 1,300 beds. In addition, the

Wingfield-Morris Orthopaedic Hospital provides 230 beds, and the City and County Mental Hospital a further 900.

The number of students entering the clinical course at Oxford each year is at present about 30. Thus a high degree of personal supervision with opportunities for practical experience may be ensured. On completing their preclinical studies about one-third of Oxford students pass into the Oxford clinical school, the remainder going for the most part to one of the London teaching hospitals for their clinical studies.

In Oxford the selection of candidates for preclinical entry is made by a Central University Committee. The names are put forward by the colleges, and preliminary acceptance by a college is essential for any prospective student. Students reading medicine at Oxford must in addition qualify for a B.A. degree. Most of the medical students do this by taking the Final Honours School of Animal Physiology, which normally occupies them for one year after they have taken the first B.M. examination in organic chemistry, anatomy, and physiology. Having taken the B.A. degree most students do a course of general pathology, bacteriology, and pharmacology lasting two terms before going on to their clinical studies.

The University and the Teaching Hospital

Earlier this year a request was sent by the University of Oxford to the Ministry of Health for improved facilities in the Radcliffe Infirmary and certain administrative changes in the United Oxford Hospitals as a whole. Following the report of the Goodenough Committee in 1944, the University now wishes to change the pattern of the existing clinical school to one of a special type in which unusual emphasis is placed on the scientific approach. This will be in keeping with the type of scientific education provided in the preclinical departments, and especially in the Honour School of Physiology. The case set out in the University's letter to the Ministry was that it would not be possible to proceed on the lines proposed until the University departments had adequate facilities in the teaching hospital and adequate control of academic policy. What the University had suggested is that ultimately the greater part of the beds in the Radcliffe Infirmary should be under the direction of full-time staff appointed by the University; that the Radcliffe Infirmary should concentrate on supplying those services which are likely to prove most valuable from the point of view of teaching and research; and that the University should have a larger voice in determining the policy of the teaching hospital. Meanwhile plans have been completed and funds assigned for the building on the Radcliffe site of a much enlarged Nuffield department of medicine which will for the first time provide fully for the needs of the professor of medicine within the main teaching hospital.

Cambridge University Medical School

In order to become an undergraduate member of the University of Cambridge a student must have been accepted for admission by one of the constituent colleges or by Fitzwilliam House, the non-collegiate body. Most of the colleges will not admit candidates for the degree of M.B., B.Chir. unless they have passed or secured exemption from three parts of the first M.B. examination. All college entries are subject to a university quota, and the number wishing to enter continues to exceed the number of places available (about 220 per annum).

Instruction in the preclinical subjects for medical degrees is given in the departments of anatomy, biochemistry, botany, chemistry, pathology, pharmacology, physics, physiology, and zoology. At present it is not possible to provide organized facilities for undergraduates to complete the full clinical course in Cambridge, and this is ordinarily taken in London or at one of the larger provincial teaching hospitals. The regulations for the M.B., B.Chir. degree require three years' residence in Cambridge during the preclinical period. Before a candidate can be admitted to the final M.B. he must obtain honours in a tripos (or, if over standing for honours, he must reach the honours standard in Part I of the natural sciences tripos). The medical student will commonly therefore read for Part I of the natural sciences tripos in the subjects of anatomy, physiology, and one or more other subjects, or two half subjects, and will take it in his second or third year, thus incidentally completing his qualification for the B.A. degree on keeping the necessary terms. In addition to obtaining honours in the tripos he must also reach a qualifying standard in anatomy and physiology. A student who obtains honours in Part I of the natural sciences tripos but does not reach the qualifying standard in those subjects, or who has obtained honours in some other tripos, must pass a qualifying examination in anatomy and physiology, and all students must also pass an examination in pharmacology before they can be admitted to the final M.B. examination. In the normal course a candidate will take Part I of the final M.B. examination two years and three months or more after beginning his clinical studies away from Cambridge, and Part II two years and nine months or more after.

The long vacation courses held each year in July and August provide instruction at Addenbrooke's Hospital in elementary clinical methods and introductory psychology (including practical demonstrations) during the period of transition from preclinical to clinical studies. The course in elementary clinical methods is concentrated on instruction in the simple technique of making a proper examination of patients attending the general and special departments of a hospital. Lectures are included on "The Career of Medicine," "The Social Background of Disease," "Epidemiology," and "The Practice of Medicine in the Home."

MEDICAL SCHOOLS IN ENGLAND AND WALES

New Clinical Curriculum at Liverpool

At the *University of Liverpool* the 1953 intake of medical students was approximately the same as in recent years—namely, 93 (24 women, 69 men); of these, 48 entered the first year of study and 45 the second year. The number of applicants shows no sign of decreasing, but, with the growing tendency for each candidate to apply to several medical schools, it is difficult to judge the overall position. The new clinical curriculum which came into operation last session is working satisfactorily; the separate professional examination in forensic medicine and public health has been discontinued, the subjects now being included in other parts of the final M.B. examination. Systematic lectures during the first five clinical terms are now given only at 9 a.m., the students spending the rest of the day in the hospitals to which they have been assigned; previously they returned to the medical school for an afternoon lecture.

The building of the first wing of the new Medical School is well advanced. This will house the departments of pathology, bacteriology, and pharmacology, and will include animal-house accommodation. During April the regional clinical conference of the British Medical Students' Association was held in Liverpool. In addition to Liverpool students, there were 62 from other medical schools in England, Scotland, and Northern Ireland who attended.

Financial Difficulties Surmounted at Birmingham

The past session has been a difficult one at *Birmingham Medical School*. After a period of continuous and successful development the Medical School was suddenly confronted with the harsh reality of severe financial stringency, estimates had to be cut and rigid economy became necessary in all departments. Fortunately an appeal by the University to industry for additional income has proved successful and will, it is hoped, ease the financial position for some years to come, certainly until the end of the present quinquennium. The new building for clinical research on the Queen Elizabeth Hospital site has now been occupied and the adequate

staffing of its laboratories is in progress. There has been no decline in the number of applications for entry to the school.

Competition Still Keen at Durham

At the *University of Durham* competition for places in the Medical School is still keen. The majority of vacancies are filled by students qualified for exemption from the first M.B., B.S. examination, having passed at advanced level the subjects of chemistry, physics, and biology in the general certificate of education.

During the past year building operations on the south wing of the school have inevitably caused a certain amount of inconvenience and improvisation, but this has been borne most cheerfully in the knowledge that when completed the extensions will provide greatly needed accommodation in which to develop teaching and research in the subjects of physiology and pharmacology, and possibly provide easement of overcrowded conditions in other departments.

Staff Changes at Sheffield

The report from the *University of Sheffield* largely concerns staff changes. A notable honour to be recorded is the (joint) award to Professor H. A. Krebs of the Nobel Prize for Medicine and Physiology. Professor Krebs received also the Lasker Award of the American Public Health Association. A further honour, although at the same time a great loss to Sheffield, is Professor Kreb's recent election to the Whitley Chair of Biochemistry at Oxford in succession to Sir Rudolph Peters.

Reference was made last year to the resignations of Professors H. N. Green and E. J. Wayne. To these must now be added the retirement of Professor R. St. L. Brockman from the chair of surgery. Dr. G. M. Wilson, formerly senior lecturer in therapeutics, has already succeeded Professor Wayne in the chair of pharmacology and therapeutics. In October, Professor Green's chair will be filled by Dr. D. H. Collins, now reader in clinical pathology in the University of Leeds; while Mr. R. P. Jepson, at present a reader in the University of Manchester, will succeed to the chair of surgery, which has been put on to a full-time basis. The opportunity of Dr. Collins's appointment is being taken to bring the pathological services of the United Sheffield Hospitals, especially at the Royal Infirmary, into closer relationship with the University. As a result of the generosity of the Franklin Trustees, the chair of medicine will in future have associated with it the name of Sir George Franklin, a former Pro-Chancellor of the University. A resignation additional to those already mentioned is that of Dr. J. L. A. Grout, University lecturer in radiology and successively secretary and chairman of the Medical Advisory Committee of the United Sheffield Hospitals. In addition to being named a C.B.E. in the Queen's Birthday Honours List, Dr. Grout has received the first Honorary Doctorate in Medicine to be conferred by the University.

Applications are being invited for the James Morrison Research Fellowship, recently established for the encouragement of "the pursuit of researches into the treatment of cancer by *x*-radiations and radioactive materials or other methods of investigation," and for the Fellowship established by the Nuffield Foundation to enable a senior research worker to be attached to the Sheffield centre for the investigation and treatment of rheumatic diseases.

Rearrangements at Manchester

In the *Manchester Faculty of Medicine*, with the transfer of the departments of occupational health and of obstetrics and gynaecology to the clinical sciences building in York Place, space in the Medical School has been reallocated and extensive alterations completed. These provide new laboratories and a much-needed extension of the facilities in the library in the form of an additional students' reading-room and space for book storage. The Darbishire House Health Centre began receiving patients in April, and was formally opened by the Minister of Health in June. The development of this scheme is being watched with keen interest. The regulations for Part II of the second M.B., Ch.B. examination in anatomy and physiology have been revised, and candidates taking the examination for the first time who have passed creditably in one subject and obtained an approved minimum mark in the other may be allowed to sit for this subject separately in a subsequent examination.

Extensions at Leeds

At the *University of Leeds* during the last year new biochemical laboratories in Hyde Terrace were opened by Sir Rudolph Peters. The conversion of three large houses previously used as a nursing-home has been most successful, and the new premises provide excellent research and teaching accommodation for science students. The research accommodation vacated in the Medical School itself will be used to make a much-needed teaching laboratory.

During the year the first appointment to the newly instituted full-time chair of surgery was made. Professor J. C. Goligher will take up his duties at the beginning of the next session.

The University of Leeds celebrated its jubilee last April, and the Medical School participated in the "open days" arranged during the celebrations, when members of the public were invited to visit the University and see demonstrations of the work of many departments.

In May, at an informal ceremony, a bronze head of Professor McLeod, by Jacob Epstein, was presented to the University. The cost has been defrayed from a fund subscribed by his colleagues and friends to commemorate Professor McLeod's tenure of the chair of bacteriology from 1922 to 1952.

The review of the curriculum has progressed, and the task is now, it is hoped, nearly complete. Plans for new developments are going ahead as fast as accommodation and funds permit. Applications for entry to the school continue at a high level.

Research Projects at Bristol

During the past session the *Bristol Medical School* has continued its activities with little change. Work has started on the building of the university department of obstetrics at Southmead Hospital, and the extensions to the department of medicine in the Royal Infirmary have been completed, and this includes a new lecture theatre which will accommodate 80 students. The scheme by which students in their final year attend the practice of general practitioners has been most successful.

The board of governors of the teaching hospital have set up a research committee to assist in the planning and appropriation of funds available for research projects, and additional research accommodation is being sought.

The Veterinary School, which is in the Medical Faculty, continues to attract a very large number of applicants, and the value of its close association with medicine is becoming increasingly apparent. The plans for new buildings for veterinary surgery have been approved, and work will start on them during next session.

Medical Education in Wales

The *Welsh National School of Medicine* continues to adjust itself to the revised regulations for the degrees of M.B., B.Ch. which have been gradually coming into force over recent years. The most difficult issue is to decide at what stage failure in university examinations should involve exclusion from further studies in the School; and, in particular, whether any student should be admitted or readmitted who is not eligible and working for a university degree. The academic authorities are conscious that there has been a little less rigidity in this matter in the past than in most medical schools in England and it merits at least fresh consideration. This may involve further revision of the regulations.

Much time has been devoted during the past year to the arrangements for the courses and examinations for the B.Pharm.(Wales). A co-operative arrangement was tentatively made some twenty years ago between the federal

University of Wales and the Technical College of Cardiff (now known as the Cardiff College of Technology and Commerce) whereby students for this degree should be registered and presented by the Welsh National School of Medicine to the University for the degree. The major part of the teaching is given in the Technical College. The University has never been satisfied with the scheme, nor has the School, and a Board of Studies in Pharmacy has now made proposals to the Senate of the School for its complete revision.

A whole-time chair in anaesthetics was created during the year. The department was made possible by the co-operation of the Board of Governors and the Regional Board and with some covenanted help by firms interested in anaesthetics and apparatus for anaesthesia. Dr. W. W. Mushin, who had been lecturer and director of anaesthetics, was appointed on the recommendation of a special committee of selection. In addition to teaching, the department organizes the service of anaesthesia not only in the teaching hospitals proper but also in a number of hospitals in the area around Cardiff, most of which are clinical institutions of the School.

The School is being pressed by local dentists and by the Welsh Board of Health to provide postgraduate courses in dental surgery. Although there is no dental school or dental hospital in Wales, the proposal is receiving careful consideration.

An additional floor has been provided in the Institute of Pathology to accommodate the public health laboratories of the Medical Research Council. The bacteriologist of these laboratories has been the university lecturer in bacteriology for a number of years, and members of his staff have taught and helped in other ways in the Medical School. It is hoped that the new physical integration may lead to a still closer association on the personal side.

The School still awaits the decision or comments of the University Grants Committee and the Welsh Board of Health on the detailed proposals submitted to them for a new medical teaching centre, for which a large site has been purchased.

SCOTTISH AND IRISH SCHOOLS

Edinburgh

At the *University of Edinburgh* the year just concluded has seen continuing and expanding activity, and the introduction of certain changes in the procedure and rules governing the admission of students to the Faculty of Medicine. The number of applicants for admission in October, 1954, to the course leading to the degrees of M.B., Ch.B. continues to be very high in relation to the number of places available. Those graduating in July of this year were the first to do so under current regulations by which the curriculum extends over six years.

The demand for places in the Royal (Dick) School of Veterinary Studies for the course leading to the degree of B.V.M.S. again exceeds the number available. The number of suitably qualified applicants for admission to the School of Dental Surgery, however, is somewhat disappointing, but this may reflect a trend which has been noted elsewhere in the country at the present time. For the degree of B.V.M.S. or B.D.S. the period of instruction is in each case five years.

Students in medicine, dentistry, and veterinary medicine and surgery all attend the same first-year course, with professional examinations in physics and zoology in March, and in chemistry and botany in July. Students in all these subjects are governed by the same regulations relating to class and professional examinations.

A new procedure for the selection of medical students is being adopted in the forthcoming academic year and a majority of applicants will be required to appear for interview by a selection committee before admission to the Faculty. Those applying for admission as students for the M.B., Ch.B. course beginning in October, 1955, should submit their applications to the Dean of the Faculty by December 31, 1954.

Glasgow

At *Glasgow University* the number of applications for admission to the Medical School is approximately the same as last year. Owing to the change from a five-year to a six-year curriculum instituted in 1949, the session just ended has produced an unusually small number of graduates, these being students who through illness, failure at examinations, or the taking of additional degrees such as a B.Sc., have been delayed in their curriculum. No new senior posts have been created in the teaching establishment, but retirements have led to a number of changes in senior teaching personnel, both within the professorial staff and among those in charge of non-professorial clinical teaching units. The junior teaching staff has been augmented by several additions in the lecturer grade to the establishments of individual departments. No major changes have been made in the organization of the curriculum, but arrangements are in train to provide greater facilities for research and teaching in anaesthetics.

St. Andrews and Aberdeen

In the School of Medicine of the *University of St. Andrews* instruction in the subjects of the clinical years of study is given in Dundee, while the premedical and preclinical subjects can be studied either at St. Andrews or at Dundee. The annual intake of students to the Faculty of Medicine is limited to between 70 and 80 to ensure that the hospital facilities available are sufficient to allow of adequate clinical instruction being given to each undergraduate, as advised by the Goodenough Committee. In October, 1948, the six-year curriculum, recommended by the General Medical Council, was introduced and the necessary arrangement of work in the later years of study has now been completed. The laboratory accommodation in both preclinical and clinical years has been recently extended and provides excellent facilities for students.

At both centres there are excellent student residences which accommodate undergraduates from all, or any, of the Faculties. Medical students in their early years are encouraged to reside in these so that there is a width of contact among the undergraduates which is of great educational value.

At the *School of Medicine, Aberdeen,* during the final 12 months of the curriculum a student must reside in the medical students' residence for a period of at least 16 weeks, during which he attends the practice of the maternity hospital and of the medical and surgical wards of the Royal Infirmary and the Sick Children's Hospital and conducts personally the requisite number of cases of labour. Final-year students may be attached to general practitioners in the district for one month.

Medical Education in Ireland

In the *Queen's University of Belfast* the principal development of the year has been the opening of the new buildings of the Institute of Clinical Science by H.E. the Governor of Northern Ireland in May last. The buildings comprise the largest development in the University's history since its foundation in 1845.

Provision has been made in the two new blocks adjoining the existing pathological institute, for the housing of six departments: medicine, surgery, obstetrics, child health, social medicine, and therapeutics, with tutorial rooms seating 282 and 221 respectively, with ciné and sound equipment, also a new medical library which will provide 20,000 volumes, with reading-rooms for both staff and students. In future, these new buildings with the adjacent hospitals, the Royal Victoria Hospital, the Royal Maternity Hospital, the Royal Belfast Hospital for Sick Children, and the Musgrave Clinic, will provide a centre of exceptional facilities for the clinical teaching of undergraduates and of research for postgraduates.

Several new appointments have been made, including Dr. G. S. W. Dick, of the Medical Research Institute,

London, to the new chair in bacteriology, and Dr. J. B. Gibson, of Glasgow, to a lectureship in pathology.

The *School of Physic, Trinity College, Dublin,* provides a complete training in the medical sciences in preparation for the degrees of M.B., B.Ch., and the B.A.O. of the University of Dublin. Medical students are required to take a modified Arts course leading to the degree of B.A. All courses and degrees are open to men and women alike. External students are not accepted.

The constituent colleges of the *National University of Ireland* are those of Dublin, Cork, and Galway. Between 200 and 300 students graduate in medicine from these colleges each year.

The Royal College of Surgeons in Ireland (St. Stephen's Green, Dublin) admits to its pre-registration classes approximately 100 students each year. Nearly all the students take the Irish Conjoint Board's examinations, but some take the London examinations in addition.

APPOINTMENTS OVERSEAS

Medical Branch of Overseas Civil Service

The Colonial Medical Service becomes a branch of H.M. Overseas Civil Service in October of this year. Openings in this branch occur in all parts of the world, the largest number being in Africa. Candidates must normally be British subjects whose names appear on the *Medical Register.* For permanent employment they must be under 40 or 45 years of age (varying according to the age of retirement in the territory, which in most territories is 55). Short-term contract appointments are available for candidates above the age limit for those who do not wish to commit themselves to a Colonial career from the outset. In many Colonial territories there is a scheme whereby doctors in the National Health Service may take temporary posts up to six years without loss of National Health Service pension rights. A resettlement grant is payable at the end of their Colonial service, but those eligible for and desirous of transfer to the permanent and pensionable establishment of the medical branch of the Overseas Civil Service may do so, with the agreement of their employing Governments. Officers appointed on permanent terms are normally required to take a course in tropical medicine and hygiene either before going overseas or during their first furlough.

A large number of specialist appointments exist in the Medical Branch of the Overseas Civil Service. These are normally filled from members of the Service, and senior administrative appointments are almost entirely filled by the promotion of serving officers. The total number in the various Government medical departments amounts to more than 800, and an even larger number of officers are appointed locally. Vacancies for women doctors arise from time to time, particularly for those with special experience in obstetrics, school health, child welfare, and nutrition.

Full particulars of terms and conditions of service may be obtained from the Director of Recruitment, H.M.O.C.S., Colonial Office, Sanctuary Buildings, Great Smith Street, London S.W.1.

Other Overseas Appointments

Medical schools overseas employ doctors from the United Kingdom as teachers. The recruiting agency for certain of the Colonial medical schools is the Inter-Varsity Fellowship for Higher Education in the Colonies. Some overseas hospitals, such as the King George V Merchant Seamen's Hospital, Malta, and the British Hospital, Lisbon, also employ British doctors. Short-term resident appointments are frequently advertised by Dominion and American hospitals. Medical staffs are also employed by certain big commercial undertakings working abroad, including engineering firms, development corporations, and mining companies. The larger shipping companies offer employment on a more or less permanent basis for about 100 ship surgeons. Application should be made to the various companies at their head office.

A small number of British doctors are attached to certain of the British embassies and legations, where they undertake medical care of the staffs and their families and sometimes of other British subjects.

Missionary Medicine

For doctors who feel a call to dedicated service in the mission field there is great need and opportunity. Any who have this service in view are advised to spend eighteen months or two years in resident appointments after qualification. Special missionary training is required by some of the societies. Although offers for long service are preferred, service may be for terms of eighteen months to five years, according to the country and the climate. Applications from students or qualified men and women should be made either to the secretary of one of the denominational or interdenominational bodies, through the local branch of the Student Christian Movement, or to the chairman of the Medical Advisory Board of the Conference of Missionary Societies, 31, Bedford Place, London, W.C.1.

MEDICAL SERVICE OF THE L.C.C.

The London County Council, which is the largest local authority of the country, employs in its Public Health Department about 100 whole-time and 500 part-time medical officers. The duties of those holding the whole-time appointments in the higher grades are mainly administrative. Generally speaking, the senior officers have graduated through the clinical field and have special knowledge in at least one branch of the service. The assistant medical officers are mainly engaged in the school health and maternity and child welfare services. Suitable qualifications are the D.C.H. and the C.P.H. or D.P.H. Arrangements are made for some of the officers to have clinical responsibilities at hospitals and to gain experience of environmental health services in the metropolitan boroughs.

The part-time officers are employed in a variety of work—for example, in residential nurseries, welfare institutions, staff examinations, sessional work at clinics, and in school medical inspection. By arrangement with the London School of Hygiene, the Institute of Child Health, and several undergraduate schools, students have the opportunity of gaining experience in the Council's various services.

Salaries and Titles

The designations and salary scales of the Council's medical staff have recently been altered in some particulars. The salary of the medical officer of health to the Council remains at £4,000 a year. That of the deputy medical officer of health is now on the scale £2,400–£250 (biennially)–£2,900. For divisional medical officers the salary scale varies according to the population of the nine divisions in the London area. In divisions which have a population of up to 400,000 the scale is £1,600–£50–£2,000; and for those with a population of over 400,000 it is £1,700–£50–£2,050. A divisional medical officer who is also medical officer of health for two boroughs receives £2,475–£100, and after reaching £2,675 has a further increment of £50 to £2,725. An assistant divisional medical officer (now retitled deputy divisional medical officer) in divisions with a population up to 400,000 receives £1,400–£50–£1,700; and in divisions with a population above that limit, £1,450–£50–£1,750. The scales for other grades are: senior principal medical officer, £2,075–£100–£2,275; principal medical officers and psychiatrists (whole-time), £1,750–£50–£2,050; senior assistant medical officers (now retitled assistant principal), £1,300–£50–£1,550; and assistant medical officer (now retitled medical officer), £950–£50–£1,300. The scales for two deputy divisional medical officers who are also deputy borough medical officers of health are at present under review.

DEGREES AND QUALIFICATIONS

Admitting Primarily to the Register

All the universities confer degrees and diplomas admitting primarily to the *Medical Register*. The abbreviations for registration following a pass in the final examination in the universities are as follows: M.B., Ch.B., Birmingham, Bristol, Leeds, Liverpool, Victoria University of Manchester, Sheffield, and the four Scottish universities; M.B., B.Chir., Cambridge; M.B., B.S., Durham and London; B.M., B.Ch., Oxford; M.B., B.Ch., Wales, Belfast, National University of Ireland, and University of Dublin; and L.Med., L.Ch., Dublin.

Nearly one-third of those who pass the final or qualifying examinations do so under the auspices of one of the three Conjoint Boards. Candidates for the English Conjoint are examined by the examining board in England of the Royal Colleges of Physicians and Surgeons (Examination Hall, Queen Square, London, W.C.1). The Board's examinations are held four times a year. The Scottish Conjoint Board furnishes the triple qualification of the Royal Colleges of Physicians and Surgeons of Edinburgh and the Royal Faculty of Physicians and Surgeons of Glasgow. These three bodies have an arrangement by which, with one series of examinations, students may obtain the diploma. Details may be obtained from the Registrar, 18 Nicolson Street, Edinburgh, 8. The joint licence in medicine, surgery, and midwifery is issued by the Royal College of Physicians of Ireland and the Royal College of Surgeons in Ireland. Regulations can be obtained from the Secretary of the Conjoint Board, Royal College of Surgeons, St. Stephen's Green, Dublin. The abbreviations are as follows: English: M.R.C.S.Eng., L.R.C.P.Lond.; Scottish: L.R.C.P.&S.Edin., L.F.R.P.S.Glas.; Irish: L.R.C.P.I.&L.M., L.R.C.S.I.&L.M.

The Irish Conjoint Board differs fundamentally from the English and Scottish Conjoint Boards in that it has a large teaching school under its control. After passing the Board's examination in general education, candidates for the qualifying diploma are required to do a one-year course in chemistry, physics, and biology, these subjects being treated with special reference to their applications in medicine. After passing the pre-registration examination in these subjects a five-term course in anatomy and physiology is taken. A premedical term is then undertaken in which the introductory course is carried out at the hospital, and this is followed by three years of clinical work. There are three professional examinations. Candidates are accepted from most of the recognized schools at home and abroad, but in practice 99% of the candidates are from schools of surgery which are controlled by the Royal College of Surgeons in Ireland with the co-operation of the Royal College of Physicians of Ireland in matters which are within the province of medicine proper.

The Society of Apothecaries of London (Apothecaries Hall, Black Friars Lane, E.C.4) confers a diploma (L.M.S.S.A.Lond.) registrable under the Medical Act, 1886. Examinations for the final subjects are held monthly, except in September, and examinations in anatomy, physiology, and materia medica are held quarterly.

The licentiateship of the Apothecaries Hall of Dublin (95, Merrion Square) entitles to registration under the Medical Act, 1886. It enables the holder to practise pharmacy as well as medicine, surgery, and midwifery, which means that he may, if he desires, open a medical hall. But this applies only to people who are qualifying to become apothecaries—that is to say, doctors—not pharmaceutical chemists. The Hall is an examining body only.

Commonwealth List

Diplomas in medicine and surgery registrable in the Commonwealth List are granted by the Universities of Sydney, Queensland, Adelaide, and Melbourne; Ceylon Medical College; the University of Ceylon; the University of Hong Kong; the Royal University of Malta; the University of New Zealand; the Universities of South Africa, Capetown, and Witwatersrand, and (in the case of degrees granted on or after October 24, 1947) the University of Pretoria; the King Edward VII College of Medicine, Singapore, the University of Malaya; and the Punjab University, Pakistan. Diplomas of the Universities of Alberta, Manitoba, the Dalhousie University, Nova Scotia, the College of Physicians and Surgeons, Manitoba, the Newfoundland Medical Board, the Provincial Medical Board, Nova Scotia, and the Medical Council, Prince Edward Island, are registrable, provided registration is sought either after examination in the Province concerned or after examination held by the Medical Council of Canada, and acceptance by the provincial authorities. Membership of the Colleges of Physicians and Surgeons of Alberta and Saskatchewan is also registrable. The M.D., C.M. of Halifax Medical College is registrable if obtained before August 31, 1911. With some exceptions and subject to dating, the registrable qualifications of the universities of India are recognized. The M.B., B.S. of the University of Rangoon, Union of Burma, if granted on or after December 10, 1936, is registrable. The registration, if previous to January 3, 1948, before the Union of Burma became a foreign country to which Part II of the Medical Act, 1886, applies, is in the Commonwealth List; if after that date, in the Foreign List. The degrees of the University of Agra are recognized in respect of Agra Medical College, of the University of Delhi in respect of the Lady Hardinge Medical College, of the University of the Punjab in respect of Amritsar, and of the University of Gauhati in respect of the Assam Medical College.

Since the beginning of 1953 practitioners holding overseas Commonwealth and other diplomas who wish to obtain full registration in this country have had to furnish the General Medical Council with evidence that they have had such house officer experience as is required of applicants from the United Kingdom or other experience not less extensive.

Higher Qualifications

A full list of degrees, diplomas, and courses of instruction for higher qualifications, with details of regulations and fees, appears in the *Medical Practitioners' Handbook*, published by the British Medical Association.

All the universities have degrees of Doctor and Bachelor of Medicine and Master of Surgery (Master in Surgery in Scottish universities). Liverpool has a degree of Master of Orthopaedic Surgery and Queen's University, Belfast, a degree of Master of Obstetrics. Regulations governing the degree of Doctor of Medicine at Edinburgh require lodgment of two copies of a thesis, and candidates may be required to present themselves for examination, which may be a written, oral, clinical, or practical test, in the branch or department of medicine to which the subject of the thesis relates. The degree of Master of Surgery requires the submission of a thesis and, normally, also examination in a surgical subject or subjects. At Durham the old regulations for the degree of Doctor of Surgery ceased to operate from 1952. The new regulations provide that in order to qualify for the degree of Doctor of Surgery candidates must be of at least six years' standing from admission to the degrees of M.B., B.C., of the university, and the degree will be awarded primarily in consideration of individual contributions to surgical knowledge. At Leeds the degree of Master of Surgery is open to Bachelors of Medicine and of Surgery of the university of not less than five years' standing. At Bristol the degrees of Doctor of Medicine and Master of Surgery are open to medical graduates of other universities, but only to those candidates who have pursued original research in the university for not less than two years. In effect this means that these higher degrees are open only to those graduates of other universities who held appointments on the staff of the university or of one of the Bristol hospitals.

University requirements for the higher qualifications vary, and particulars should be obtained from the one selected.

The Royal College of Physicians of London (Pall Mall East, S.W.1) confers its Membership (M.R.C.P. Lond.) by examination. Fellowship of the College is gained by

election by the Fellows. The Royal College of Surgeons of England (Lincoln's Inn Fields, London, W.C.2) grants its Fellowship (F.R.C.S.Eng.) to those who pass its primary and final Fellowship examinations. Medical graduates who desire to specialize in obstetrics and gynaecology may apply for entry to the Membership examination of the Royal College of Obstetricians and Gynaecologists (58, Queen Anne Street, London, W.1). A minimum of three years' residence in recognized hospital posts is required before the application is granted. Fellowship is granted to members who are adjudged by the Council to have advanced the science and art of obstetrics and gynaecology. The College also grants a diploma in obstetrics (D.Obst.R.C.O.G.) to practitioners who pass an examination after having special experience in recognized resident appointments.

The Royal College of Physicians of Edinburgh (9, Queen Street) requires of its candidates for Membership that they shall have been qualified for at least two years. The examination is in the principles and practice of medicine and also in a selected department of medicine. Fellows must have been Members of the College for at least three years. The Royal College of Surgeons of Edinburgh (18, Nicolson Street) has a two-part examination for its Fellowship. The Royal Faculty of Physicians and Surgeons of Glasgow grants, after examination, a Fellowship *qua* physician and a Fellowship *qua* surgeon. The examinations are clinical, written, and oral.

The Royal College of Physicians of Ireland grants its Membership on examination. The Fellowship, for which Members of the College are eligible, is granted by election. The Royal College of Surgeons in Ireland requires two examinations—primary and final—for its Fellowship, the first in anatomy, physiology, and pathology, and the second in surgery.

The Faculty of Radiologists (45, Lincoln's Inn Fields, London, W.C.2) offers a Fellowship (F.F.R.) to medical graduates of five years' standing who have spent at least one year in general clinical work at approved hospitals, hold a radiological diploma, and, since obtaining it, have practised radiology exclusively for at least two years. Candidates are required to pass an examination. Those who hold higher medical or surgical qualifications may be exempted from the examinations in general medicine, general surgery, and pathology.

POSTGRADUATE EDUCATION

Facilities in London

In London the three Royal Colleges and the British Postgraduate Medical Federation (University of London) co-operate in providing postgraduate medical education, supplementing the opportunities available at the undergraduate schools and teaching hospitals. All postgraduates, including those from the Commonwealth and Empire and from foreign countries, may obtain the advice of the staff of the Central Office of the Federation (2–4, Gordon Square, London, W.C.1) on programmes of study and general arrangements. The provisions made by the postgraduate institutes included in the Federation (of which there are now 14) are detailed below. Each of these institutes is associated with a special postgraduate teaching hospital or with one of the Royal Colleges. The Federation also comprises the Postgraduate Medical School of London at Hammersmith Hospital, with its university departments of general medicine, general surgery, and pathology. The Royal Colleges also arrange courses of lectures in the clinical aspects of their specialties, and provide expert advice and guidance on suitable hospital appointments and programmes of study for candidates for their higher qualifications.

The number of students who can be admitted to the clinical practice of the hospitals with which the institutes are associated is limited. Resident clinical appointments are available to suitable students of the institutes and provide the most valuable form of postgraduate education. Selected graduates have opportunities for research. At all the institutes courses of instruction are given throughout the academic year; these are suitable for graduates in the early stages of their specialist education and also for those who have completed their practical training. Two or more years of hospital work in general medicine and general surgery after graduation are normally advisable before beginning work in the special branches. The work at the institutes is of an advanced type and is comprehensive enough to enable graduates with suitable practical experience to prepare for higher degrees and diplomas. Emphasis is placed on clinical and laboratory teaching, supplemented by lectures and demonstrations. Each institute has a reference library and takes the current journals of its specialty.

The British Postgraduate Federation awards annually a number of travelling fellowships to graduates working in medical and dental schools or teaching hospitals of the University of London, for the purpose of studying abroad. In addition, short courses and other forms of continuing education for general practitioners are arranged at hospitals throughout the four metropolitan regions, with the assistance of the regional advisers in postgraduate medical education. The Federation has arranged a fifth series of advanced lectures, entitled "The Scientific Basis of Medicine," to be delivered two afternoons a week at the London School of Hygiene and Tropical Medicine during the autumn and winter terms of the 1954–5 session. The lectures are designed especially for research workers and specialists in training and are open to all medical practitioners without fee.

Postgraduate students from abroad are advised to make their arrangements well in advance. Those who desire the assistance of the central office of the Federation are advised to get in touch with the Director, Professor Sir Francis Fraser, at the address given above, as far in advance of their arrival in this country as possible. Those sponsored by their universities, governments, or other official bodies receive first consideration in the allotment of vacancies. Established specialists from overseas who are here for a short time, and who wish to see something of the practice of the country, are always welcome; they are regarded as visiting colleagues, and the experts in their specialties are always ready to receive them and let them accompany them in their work and teaching. An information bureau of postgraduate activities in London and other university centres is maintained at the central office.

The Postgraduate Medical School

The Postgraduate Medical School of London (Ducane Road, London, W.12) is associated with the Hammersmith Hospital. The teaching in the clinical departments, based on ward work, is continuous and is supplemented by lectures during three 10-week terms starting in January, April, and October. A course for the university diploma in clinical pathology, lasting one year, is available for a limited number of selected students. The department of radiology of the hospital provides courses for the diplomas in medical radiology of the Conjoint Board. All these courses begin in October. Long-term and short-term tuition in anaesthetics is provided for a small number of students.

The Specialist Institutes

The *Institute of Basic Medical Sciences* (Royal College of England, Lincoln's Inn Fields, London, W.C.2) comprises departments of anatomy, physiology, and pathology of the Royal College. It co-operates with other specialist institutes of the Federation in providing facilities and practical work and instruction in basic medical sciences, and provides opportunities for research for selected graduates. Full-time or part-time courses of three months' duration, suitable for candidates for higher degrees and diplomas, begin in April and October.

The *Institute of Cancer Research* (Royal Cancer Hospital, Fulham Road, London, S.W.3) comprises the Chester Beatty Research Institute and the departments of physics and radiotherapy at the Cancer Hospital. The institute is concerned with all aspects of research into the causation and treatment of cancer, with the training of research workers in this field, and with advanced teaching in biophysics and radiotherapy. Postgraduate

lectures and courses of instruction in biophysics begin in October for students studying for the M.Sc. degree in biophysics and for a diploma in medical radiotherapy. Facilities are available for research into the physical and biological foundations of medical radiology and into the clinical and pathological aspects of cancer.

The *Institute of Cardiology* (35, Wimpole Street, London, W.1) is associated with the National Heart Hospital. Six appointments of the registrar type are offered each year to physicians in training as cardiologists who already have a sound grounding in general medicine. General physicians may enrol for full-time or part-time instruction for one term of approximately three months. There are two courses annually, beginning in April and September. Intensive courses of lectures and demonstrations, each lasting a fortnight, are held in February and November, and a fortnight's course for general practitioners in June.

The *Institute of Child Health* (Hospital for Sick Children, Great Ormond Street, London, W.C.1) is associated with that hospital and with the Postgraduate Medical School at Hammersmith; the Queen Elizabeth Hospital for Children, Hackney, also participates in the clinical teaching. The Institute provides tuition throughout the year in three terms of three months each, beginning in January, April, and October; in addition a series of lectures by specialists is given each term.

The *Institute of Dental Surgery* (Eastman Dental Hospital, Gray's Inn Road, London, W.C.1) trains dental practitioners in the special branches of preventive and therapeutic dentistry, for children and adults. For candidates preparing for the F.D.S. of the Royal College of Surgeons courses lasting three months are held twice yearly, beginning in November and May.

The *Institute of Dermatology* (St. John's Hospital for Diseases of the Skin, 5, Lisle Street, London, W.C.2) gives clinical teaching throughout the year in the out-patient department of St. John's Hospital, and ward instruction is given in the in-patient unit at the Eastern Hospital. There are also facilities for study and tuition in pathology, including mycology, radiotherapy, physiotherapy, and clinical photography. A short course of lectures and clinical demonstrations is given in the summer months, and a longer and more systematic course in the winter.

The *Institute of Diseases of the Chest* (Brompton Hospital, Fulham Road, London, S.W.3) is associated with Brompton and the London Chest Hospital. Students may enrol for one term or more on an approximately half-time course, and arrangements are made for students who intend to specialize in diseases of the chest to attend a whole-time comprehensive course during the two terms beginning in October and January. During the summer term there is a full-time advanced revision course. Courses consist of clinical work in wards and out-patient departments, lectures, and demonstrations. Two one-week courses for chest clinic physicians are held in July and September.

The *Institute of Laryngology and Otology* (330, Gray's Inn Road, London, W.C.1) is associated with the Royal National Throat, Nose and Ear Hospital. A comprehensive full-time course lasting eight months is held twice a year, beginning in February and September: the first three months are devoted to a study of the specialty, and the following five months are concerned with the clinical aspect of the subject. A part-time advanced revision course lasting 10 or 12 weeks, suitable for students preparing for the higher qualifications, is held twice yearly, commencing in February and August.

The *Institute of Neurology* (National Hospital for Nervous Diseases, Queen Square, London, W.C.1) is associated with the National Hospital and the Maida Vale Hospital for Nervous Diseases. Teaching is mainly by attendance on hospital practice, supplemented by lectures and demonstrations. Two courses in clinical neurology are held annually, beginning in January and October. Clinical instruction in neurosurgery is given throughout the year. A course in the technique and clinical application of electroencephalography is held jointly with the Institute of Psychiatry two or three times a year.

The *Institute of Obstetrics and Gynaecology* (Chelsea Hospital for Women, Dovehouse Street, London, S.W.3) is associated with Queen Charlotte's, the Chelsea Hospital, and the Department of Obstetrics at the Postgraduate Medical School. Teaching is based on ward work, supplemented by lectures and demonstrations during two terms of three months' duration which begin in March and September.

The *Institute of Ophthalmology* (Judd Street, London, W.C.1) is associated with the Moorfields, Westminster and Central Eye Hospital. In addition to teaching by means of attendance on the hospital practice, a routine lecture and tutorial course, normally covering two terms of approximately 18 weeks each, is held twice a year, in March and October; the first part of the course is devoted to anatomy, embryology, histology, physiology, optics, and elementary clinical instruction, and the second part comprises bacteriology, pathology, operative surgery, medical ophthalmology, and all aspects of ophthalmic disease. Part-time revision courses are held from time to time. Clinical teaching and lectures are given at a higher level for advanced students, and there are facilities for research for suitably qualified candidates.

The *Institute of Orthopaedics* is associated with the Royal National Orthopaedic Hospital, 234, Great Portland Street, London, W.1. A complete training in orthopaedics is afforded to selected graduates who have already been trained in general surgery and the basic sciences. Clinical appointments cover a period of two or three years, with opportunity for research. A series of advanced courses, of 7 to 10 days' duration, is held each year, beginning in October, and a short revision course of a week's duration in April and September in advanced clinical orthopaedics is held.

The *Institute of Psychiatry* (Maudsley Hospital, Denmark Hill, London, S.E.5) is associated with Bethlem and Maudsley Hospitals. Training normally covers two or three years, after experience elsewhere in general medicine, and is based on responsible hospital duties under supervision. Clinical training continues throughout the year and includes seminars and case discussions. Students who, because of previous experience, do not wish to take the comprehensive two-years course are able to attend a limited series of lectures and clinical instruction. For those who wish to specialize in child psychiatry a six-months course is held twice-yearly. A year's course in abnormal psychology for the university postgraduate diploma in psychology is available to holders of an honours degree. There are facilities for original investigation under supervision in the clinical and other departments.

The *Institute of Urology* (10, Henrietta Street, London, W.C.2) is associated with St. Peter's, St. Paul's, and St. Philip's Hospitals. Comprehensive instruction is given in the wards, out-patient departments, operating theatres, and laboratories throughout the year. Week-end courses of demonstrations and lectures are held from time to time for higher examination candidates. Two courses of lectures and demonstrations of clinical and laboratory material are held each year in co-operation with the Medical Society for the Study of Venereal Diseases, each course lasting two months. During these courses the practice of the venereal departments of the hospitals is open to students. In the winter months a series of lecture discussions on urological subjects of interest to the whole profession is held weekly. Limited numbers of clinical assistants are appointed from time to time to individual surgeons for personal tuition.

The *Institute of Accident Surgery*, associated with the Birmingham Accident Hospital, Bath Row, Birmingham, has been in existence since the end of 1950. It is concerned with teaching and research in connexion with the prevention and treatment of injuries of all kinds. Regular courses in accident surgery have been held for surgeons, industrial medical officers, general practitioners, and nurses. A full week's course on accident surgery will be held at the beginning of December, 1954, and will probably be repeated in May, 1955. The Birmingham Accident Hospital is attended by postgraduate students throughout the year.

A course of instruction in homoeopathy for medical practitioners and senior students, arranged by the Faculty of Homoeopathy, begins at the Royal London Homoeopathic Hospital (Great Ormond Street, W.C.1) on October 14. It includes lectures on homoeopathic prescribing and on homoeopathy in theory and practice, also clinical tutorials for practical instruction in homoeopathic practice. The lectures deal with subjects required for examination for the Diploma of Membership of the Faculty.

A major development at the Royal College of Surgeons of England is that the College is proposing to organize a full-time clinical surgery course. This will extend over a period of eight weeks during March and April, 1955, and will be held at the Central Middlesex and West Middlesex Hospitals. Only 10 candidates will be accepted for this course.

Facilities at Oxford and Cambridge

The postgraduate medical facilities in the University of Oxford continue in the main as they have done during the last three years. Three short courses for general practitioners were held at the United Oxford Hospitals in the autumn of 1953 and five in the spring and early summer of this year. Three of these were in the form of seminars, and these proved most interesting to the general practitioners who attended. Sir Robert McCarrison, the director of postgraduate studies, has decided to cut down the number of

short courses this coming year, but a short course in otolaryngology has already been arranged for October, and practitioners are being invited to make suggestions as to the type of course they would find most beneficial and interesting.

In the United Oxford Hospitals there are ward rounds every day in medicine, and medical concilia and clinical demonstrations weekly. In surgery there are ward rounds on three days a week and clinical demonstrations on one day. Conferences in clinical pathology take place once a week, and there are clinical demonstrations in chest diseases, infectious diseases, psychiatry, geriatrics, and plastic and orthopaedic surgery, and ward rounds in tuberculosis, radiotherapy, and gynaecology. Doctors may attend the various clinics and other services on occasions convenient to themselves, whether their attendances be spread over the academic year or concentrated into periods of a week or more. If there is sufficient demand for them short courses or conferences on special subjects will be arranged. The address of the Postgraduate Medical Education Committee is 11, Keble Road, Oxford.

The School of Postgraduate Teaching and Clinical Research at Cambridge has its own administrative organization and is closely linked with the United Cambridge Hospitals. The school includes departments of experimental medicine, human ecology, medicine, and therapeutics. In the John Bonnett Clinical Laboratories the pathological and biochemical services of the United Cambridge Hospitals are provided by university teaching officers under the direction of the professors of pathology and biochemistry. Postgraduate students may be attached to any department of the hospital for special training in a field of medicine or surgery for long or short periods. This applies also to the university departments of experimental medicine, human ecology, and radiotherapeutics, in which opportunity is afforded of working for a diploma or for carrying out a research programme with a view to obtaining a higher degree of the university, such as the Ph.D. Other teaching activities organized by the medical school include a clinico-pathological conference held monthly, open to all members of the staff of the teaching hospital and the various departments of the medical school and to other practitioners in the area who are interested. One-day symposia on subjects of particular interest to general practitioners are held at monthly intervals throughout the academic year. Between October and July special sessions are devoted to teaching by all members of the consultant staff of the United Cambridge Hospitals. A small number of undergraduate students are admitted to these teaching sessions. Residential courses in midwifery are now available for undergraduate and postgraduate students at the maternity hospital.

All postgraduate courses and symposia are open without fee under a scheme of the Ministry of Health to practitioners who are under contract as principals with an executive council of the National Health Service and who have not fewer than 500 (in the case of a rural practice, 250) persons on their N.H.S. list. Practitioners who do not qualify for a grant under the Ministry of Health scheme are, in general, charged fees at rates corresponding with those which otherwise would have been payable by the Ministry. The Director of Postgraduate Education for the Cambridge region is the regius professor of physics, Sir Lionel Whitby. Further details of postgraduate and other facilities may be obtained from the secretary of the Medical School, Tennis Court Road, Cambridge.

Facilities at Other Universities

At the Medical School at King's College, Newcastle-upon-Tyne, the demand for postgraduate courses for general practitioners has been considerable. The Postgraduate Committee has arranged for two courses to be held, each course consisting of 10 consecutive weekly sessions in general medical subjects, including general medicine, child health, surgery, medicine and surgery (combined session), midwifery (two sessions, one combined with anaesthesia), and other special subjects. These courses have been arranged so as to make a particular appeal to general practitioners and to bring to notice the latest developments in the various subjects. Over 50 practitioners were accommodated in the two courses held in the spring of this year, but even so many were disappointed. It is, however, hoped to hold a further course, probably in October, for practitioners unable to gain places in the earlier courses. A short intensive course in paediatrics for general practitioners was held early in July. It included ward rounds and clinical demonstrations and provided an opportunity for informal discussion between practitioners and consultant staff in the department of child health. The demand for places in the course exceeded the number of places available.

In the Faculty of Medicine in the University of Liverpool full-time postgraduate courses have been held in general surgery (17 students attended), orthopaedic surgery (14), anaesthesia (16), public health (14), radiodiagnosis (11), radiotherapy (5), and tropical medicine and hygiene (23). The course in general surgery is suitable for candidates who have already completed the primary examination of the F.R.C.S.; for the course in orthopaedic surgery leading to the examination for the degree of M.Ch.Orth., candidates should be in prior possession of the F.R.C.S. diploma. The courses leading to the D.M.R.D. or D.M.R.T. extend over two years; candidates are allowed to hold suitable approved hospital appointments during the second year. Similarly, in the course in anaesthesia postgraduate students are found suitable appointments in recognized general hospitals for the purpose of gaining practical experience. Arrangements are in hand to start a two years' postgraduate course (part-time) in psychological medicine, suitable for candidates for the D.P.M. of the Conjoint Examining Board. It has been decided not to establish a Liverpool D.P.M., but the need for education facilities for the junior staff of the mental hospitals of the region is recognized, and steps are now being taken to supply this need. No general-practitioner refresher courses have been held this year at Liverpool, but it is hoped to resume them next session. The chief instrument for the continuing education of local practitioners is the Liverpool Medical Institution, with a membership of over 1,000, of which Sir Henry Cohen is president. Further information about postgraduate courses may be obtained from the Dean of the Faculty of Medicine.

In Birmingham several refresher courses for practitioners in the National Health Service have been held during the session, mainly at the large non-teaching hospitals in the region. These are extended courses of one half-day session a week for 11 weeks. Intensive courses on traumatic surgery are held at the Accident Hospital, on obstetrics at the Maternity Hospital, and on industrial ophthalmology at the Eye Hospital. Birmingham University does not offer diplomas, but courses for the diplomas of the Conjoint Board have been arranged from time to time when there are sufficient applicants. Refresher courses for dental N.H.S. practitioners have been arranged. The director of postgraduate medical education is Professor W. H. Wynn, Medical School, Birmingham, 15.

At Bristol University the degrees M.D., Ch.M., and Ph.D. are open to medical graduates of other universities, but only to those candidates who have pursued original research in the University for not less than two years, and in effect this regulation means that these higher degrees are open only to those graduates of other universities who hold appointments on the staff of Bristol University or one of the local hospitals. The University grants a diploma in psychological medicine, and courses for the diploma are held when sufficient numbers of candidates apply. A few postgraduates are accepted for training for the D.M.R.D. and D.M.R.T. (Conjoint), and arrangements can sometimes be made for suitable candidates to hold a part-time post in the Bristol hospitals while doing the course. A course in child health lasting three months usually begins in October of each year. The principal developments in Bristol last year were in refresher courses for general practitioners. There is an increasing demand for these, both in Bristol itself and in the periphery of the South-western Region. In the session 1953–4 extended courses have been held on Sunday morn-

ings in Bristol and Taunton, an intensive week-end course has been held at Exeter, and an intensive week's course in Bristol. All these courses for general practitioners have been well attended. The director of medical postgraduate studies is Dr. A. H. Gale, of the University, Bristol.

In Sheffield in the sphere of postgraduate work there has been considerable discussion with other authorities concerned over the exchange of senior registrars between teaching and non-teaching hospitals, and a certain amount of progress has been made in connexion with this difficult question. During 1952–3 weekly ward rounds for general practitioners continued as in past years. Some modification of this programme and possibly the introduction of others may result from the liaison recently established between the University and the North Midlands (Sheffield) Faculty of the College of General Practitioners. Courses for the D.M.R.D. and D.M.R.T. of the Conjoint Board are expected to continue as in the past; while less formal instruction in general medicine and surgery and in paediatrics can usually be provided by arrangement for approved applicants.

In the University of Leeds extended refresher courses for general practitioners, comprising one half-day session a week for six weeks, and week-end refresher courses on special topics are arranged from time to time, both in the teaching hospitals and in regional hospitals. The University grants a diploma in psychological medicine, the part-time course for which covers eight academic terms. The secretary of the Postgraduate Committee is Dr. T. A. Divine, School of Medicine, Thoresby Place, Leeds, 2.

At Manchester no refresher courses for general practitioners have been held during the session 1953–4, but it is hoped to arrange some for the coming year. Courses in preparation for the diplomas in psychological medicine, radiodiagnosis, and radiotherapy have been held.

Postgraduate Facilities in Scottish Schools

The Edinburgh Postgraduate Board for Medicine (Surgeons' Hall, Edinburgh, 8) organizes courses in internal medicine and medical sciences as well as short refresher courses for general practitioners. The Royal College of Surgeons of Edinburgh is holding two 10-weeks courses in the medical sciences, one starting on October 4, 1954, and the other on March 7, 1955; the fee is 25 guineas. The next 12-weeks course in the medical sciences organized by the Postgraduate Board will be held in July, 1955; fee, 30 guineas. A fortnight's refresher course for general practitioners will be held in May, 1955. The Board is closely associated with the University of Edinburgh in providing courses leading to the higher qualifications granted by the Royal Colleges of Edinburgh, and tries to assist graduates in obtaining hospital appointments while studying for those qualifications. The University also conducts courses of instruction leading to the D.M.R.D. and the D.M.R.T., each extending over two years. The diploma in psychiatry requires attendance at two courses each of three weeks' duration in the autumn term in addition to certain specified hospital experience. Further information regarding class arrangements and regulations governing admission is given in the programme of the Faculty of Medicine obtainable from the Faculty Office, University New Buildings, Edinburgh, 8.

In Glasgow the Postgraduate Medical Education Committee, representing the University and the Royal Faculty of Physicians, proposes to offer during the coming session an eight-weeks part-time course of instruction in anatomy, physiology, biochemistry, and bacteriology. The course—a total of about 160 hours of instruction—is suitable for candidates preparing for the primary examinations for the surgical fellowships. It is organized chiefly for the junior staff of hospitals in the Western Region, but is also open to other applicants. If desired, an honorary part-time clinical attachment will be arranged for members of the course who have no hospital appointment. Short courses in other specialties are arranged from time to time, including in the coming session a short course in chemotherapy and a course in mental deficiency. Refresher courses for general practitioners are held, consisting largely of clinical demonstrations, but including a few lectures on modern methods of therapy. The director of postgraduate medical education is Professor G. M. Wishart, The University, Glasgow, W.2.

Fellowship of Postgraduate Medicine

The Fellowship of Postgraduate Medicine (60, Portland Place, London, W.1) provides general information on postgraduate work and arranges courses for, though not restricted to, candidates for the higher degrees. These courses include general medicine, general surgery, proctology, obstetrics and gynaecology, and children's diseases. Some are full-time courses lasting from one to two weeks; others are spread over longer periods and are intended particularly for postgraduates who are not free for full-time study. The Fellowship also arranges week-end courses, occupying the whole of a Saturday and Sunday. These are given in various hospitals and include such subjects as general surgery, general medicine, orthopaedics, rheumatic diseases, infectious diseases, and plastic surgery.

MEDICAL PSYCHOLOGY

The Tavistock Clinic (2–4, Beaumont Street, London, W.1) is an out-patient clinic comprising two departments—the adult department for the treatment of patients with neurotic and personality disorders, and the department for children and parents in which difficulties in parent–child relationships and in the personality development of children are treated. A number of senior registrar and registrar appointments in both departments provide systematic training in adult psychotherapy and child psychiatry. The Clinic also offers a two-year extramural course for psychiatric registrars and consultants in the principles of psychotherapy and psychopathology, with special reference to group treatment (adults). There are courses also for general practitioners: an introductory weekly discussion group on principles of psychological medicine and the doctor–patient relationship applied to their own work, and a more advanced course, including case supervision, for those wishing to gain more experience in the treatment of neurotic and psychosomatic disorders in their own practice. In addition there are elementary and advanced training in the Rorschach method of personality diagnosis (open to psychiatrists), as well as general courses of training for clinical and educational psychologists, child psychotherapists, social workers, and speech therapists. The Clinic welcomes visitors, and has facilities for offering associate status to interested overseas psychiatrists, psychologists, and social workers who are in Great Britain for further training. Full particulars may be obtained from the Training Secretary at the above address.

The National Association for Mental Health (39, Queen Anne Street, London, W.1) arranges, in conjunction with the Extramural Department of the University of London, courses for medical practitioners, more especially school medical officers and certifying officers under the Mental Deficiency Acts, on educationally subnormal children and mental defectives. In the course, in addition to the examination and classification of such children, reference is made to other categories for whom special education has to be provided under the Education Act, 1944. Lectures are given on normal child development, the pathology and causation of intellectual retardation and maladjustment, the psychology of educationally subnormal children, educational and social implications of backwardness, etc. Much time is devoted to the subject of intelligence testing, demonstrations are given, and students administer, under direction, tests to individual children of different types and discuss the results. Attendance at the course is recognized by the Minister of Health as a valuable qualification for medical officers employed by local health authorities on work under the Mental Deficiency Acts.

The Institute of Psycho-Analysis (63, New Cavendish Street, London, W.1) furnishes a part-time course, lasting about four years, in psycho-analytic theory and technique. It includes a personal analysis, attendance at lectures and

seminars, and clinical work under supervision. The Institute does not set out to teach all aspects of psychiatry, and general psychiatric experience must be obtained at other clinics and hospitals.

The training given at the Institute of Psychiatry, associated with Bethlem Royal and Maudsley Hospitals, is referred to in the account of postgraduate facilities in London, given on page 523.

Courses in psychiatry are given at various universities.

RESEARCH CAREERS

The attractions of research outweigh in the minds of some of those entering medicine the attractions of clinical practice. The first step is usually a junior post in the laboratory service of a teaching hospital or public health laboratory. The salaries offered are often at registrar level, providing for promotion from junior to senior registrar; or the appointment and remuneration may be in the hands of a university, with salaries in the demonstrator and lecturer classes. The largest outlets are clinical pathology and university appointments associated with teaching and research. The finest training for such a career is in the handling of the large volume of routine pathological work which passes through the laboratories of any large hospital. Aptitude for research is often manifested or confirmed during this period of training and may determine whether the future career will be spent in the employment of the Medical Research Council or in clinical pathology in a hospital, or in teaching, culminating in a readership or professorship. Applications should be addressed to individual universities, corporations, or other bodies advertising vacancies.

The Medical Research Council

The Medical Research Council (38, Old Queen Street, London, S.W.1), originally established in 1913 as the Medical Research Committee, is appointed to administer the funds provided annually by Parliament for the promotion of research in medical science. The Council is under the general direction of the Committee of the Privy Council for Medical Research, of which the Lord President is the chairman and the Minister responsible to Parliament.

The members of the Council are appointed by the Committee of the Privy Council and are 12 in number, of whom nine are appointed for their scientific qualifications. They retire in rotation after four years' service. Of the three non-scientific members, one must be a Member of the House of Lords and one a Member of the House of Commons.

The Council is not constitutionally a Government department; it selects and appoints its own staff, who are not Civil Servants. The Council's sphere of action in promoting medical research is unrestricted by territorial or departmental limitations of function. It maintains close touch with those Government departments having responsibilities for public health, and is able to collaborate freely in subjects of common interest with its sister research organizations—the Department of Scientific and Industrial Research and the Agricultural Research Council; it can also co-operate directly with cognate organizations in other countries. In promoting clinical research the Council is advised by the Clinical Research Board, appointed in consultation with the Health Department. A joint committee of the Council and the Colonial Office advises upon research on health problems in the Tropics.

The scientific staff of the Council are housed in some 50 establishments located mainly in hospitals and universities in Great Britain. The Council also maintains research laboratories in the Gambia and in Uganda. Its central establishment, the National Institute for Medical Research, comprises divisions of biochemistry, chemotherapy, bacterial chemistry, physiology and pharmacology, human physiology, experimental biology, bacteriology and virus research, physical chemistry, biophysics and optics, and biological standards; while the interests of the Council's other research units range from fundamental laboratory subjects, such as biophysics, chemical microbiology, and radiobiology, to various aspects of social and industrial medicine.

The close association of most of the Council's establishments with hospitals and universities is valuable from many points of view, especially in the opportunity it provides for collaboration in joint schemes of research. Senior members of the Council's staff are often given the status of honorary physicians of the hospitals in which their units are situated, while members of units accommodated in university departments are in many cases given honorary university appointments and participate to a limited extent in teaching.

The Council's total scientific staff numbers nearly 500, of whom over one-third are medically qualified. Its research establishments vary widely in size. The largest is the National Institute at Mill Hill, but the average research unit consists of from five to ten scientific workers with a number of technical and clerical assistants.

The aim of the Council is to provide the opportunity for careers which are equivalent to those offered in the universities to men and women of equal ability and experience. The Council's salary scales for scientific appointments are based on this principle; and, although there is no common scale for all the universities in the United Kingdom, the Council's salary grades correspond approximately with the ranks of professor, reader, senior lecturer, lecturer, and demonstrator. The emoluments of the director of one of the Council's clinical units are equivalent to those of a whole-time professor of medicine with an honorary contract as a consultant in the National Health Service. The salary of a non-clinical director would normally be equivalent to that of a major non-clinical or purely scientific chair. Apart from the directors, there are other posts in the Council's larger establishments, and particularly at the National Institute, which carry remuneration at or near the professorial level. For the most part salaries are not fixed in relation to particular posts, but rather with reference to the qualifications, experience, and responsibilities of the individuals. Promotion to a higher grade may be awarded on such grounds without change of post.

New appointments to the scientific staff, except in the cases of senior posts, are normally made for definite periods, usually of three or five years at a time. At a later stage, when an adequate degree of seniority has been attained, the Council may, in suitable cases, express the intention of continuing employment until the normal retiring age of 60, with the possibility of extension to 65.

Superannuation provision—normally under the federated superannuation system for universities, but in certain cases under the N.H.S. Superannuation scheme—is made in respect of all appointments except those of recent B.A., B.Sc., and M.A. graduates, who may have to wait a year.

In addition to maintaining its own staff, the Council makes very large numbers of short-term grants in support of specific research projects carried out by independent workers in universities, hospitals, and elsewhere. The Council also awards clinical research fellowships, scholarships for training in research methods, and certain travelling fellowships; these last are awarded either on an agency basis for other bodies or from private benefactions entrusted to the Council.

Public Health Laboratory Service

On behalf of the Ministry of Health the Medical Research Council administers the Public Health Laboratory Service, which was originally set up as an emergency service in 1939 and has since become permanent; there are over 50 separate laboratories in England and Wales.

In addition to their more routine duties, members of the staff of the Service, whose salary scales are normally equated with those of the National Health Service, undertake research problems in bacteriology and epidemiology. Furthermore, the service maintains a number of special laboratories which act as reference centres for particular infections, and these engage largely in research.

MEDICAL AUXILIARIES

The Board of Registration of Medical Auxiliaries (B.M.A. House, Tavistock Square, London, W.C.1) exists to maintain and publish a register of properly qualified medical auxiliaries. It is a registering body, not an examining one, and has played an important part in raising and maintaining the standards of training and ethical conduct of the various groups of medical auxiliaries. The Board helps the medical auxiliary professions to attain or to consolidate and improve their professional status, and insists that each such profession shall, before registration, get through its "teething troubles," and establish at least the basic principles for training and practice. In return it offers the registered persons protection in that they and they only are recommended to doctors as qualified to practise their particular specialty. By this means it has enhanced the status of medical auxiliaries and has relieved them to a considerable extent of the competition of "quack auxiliaries."

The main function of the Board, therefore, is to maintain and publish registers. Separate or section registers of members of each branch of medical auxiliary work are printed. These registers contain the names of all the members of the various qualifying bodies, with the exception of radiographers, amongst whom 100% registration has yet to be attained. The registers are supplied free to medical officers of health, hospital management committees, hospitals, public libraries, medical practitioners, and others, the circulation lists varying according to the particular group of auxiliaries. The Board proposes to publish early next year a comprehensive register as well as the various sectional registers. The register is composed of the following sections: chiropodists, dispensing opticians, operating theatre technicians, orthoptists, radiographers, and speech therapists. Since 1936 the Board has provided the medical profession and others with registers of persons suitably qualified, academically and professionally, to whom they can with confidence send their patients for treatment. The registers are also a useful guide to employing authorities who seek the services of medical auxiliaries in the various capacities. Applications for recognition of other groups of medical auxiliaries are under consideration. Copies of any or all the current sections will be sent free to medical practitioners on application to the registrar.

The Chartered Society of Physiotherapy (Tavistock House North, Tavistock Square, London, W.C.1) maintains its own register, and approves schools for training and examinations.

THE ARMED FORCES

The conditions of service in the medical branches of the armed Forces have recently been considerably revised, and the information given below is now current.

Naval Medical Service

The medical service of the Royal Navy offers to medical men who desire the prospect of sea service an opportunity of practising their profession in an attractive environment. Officers serving on the permanent list are encouraged to specialize in all branches of medicine and are given full facilities to obtain higher qualifications. Courses of postgraduate study are carried out both in naval hospitals and at civilian teaching centres. "Naval medicine" comprises a variety of subjects. It includes aviation medicine, the physiology of diving, the physical aspects of service afloat and ashore, tropical diseases, and industrial hygiene. The naval medical officer is no longer concerned with the care of the sailor only, he must also be up to date in his knowledge of diseases of women and children in order that he may attend the families of Service men and of Admiralty personnel serving abroad, as well as W.R.N.S., members of the Queen Alexandra Royal Naval Nursing Service, and the naval V.A.D.s.

Service on the active list is up to the age of 55 for all officers, 57 for surgeon captains, and 60 for surgeon rear-admirals. Previous experience, both Service and professional, is counted in assessing seniority—previous commissioned service as a medical officer in one of the armed Forces counts in full, and non-medical commissioned service counts as to half. Civilian hospital experience and also some special experience in private practice may be allowed to count up to a limit of seven years in all. Officers serving in the United Kingdom are granted 42 days' leave per annum on full pay and allowances, with three free travel warrants. If serving overseas local leave is given at the rate of 14 days a year, and foreign service leave at the rate of two days for each month is allowed on returning to the United Kingdom.

All entries at present are being made as short commissions in the first instance. Short service consists of four years, during which period a medical officer becomes a surgeon lieutenant, R.N., and is eligible to apply for transfer, with full seniority, to the permanent list. The normal career of a medical officer enables him to be promoted to the full rank of surgeon lieutenant after one year's service and to surgeon lieutenant-commander after a further seven years' service. In the normal course surgeon lieutenant-commanders are promoted to surgeon commanders by selection at about their fifteenth year of total service, and surgeon commanders to surgeon captains at about their twenty-third year of total service.

The following table shows the total annual income of single and married officers at each stage of their careers:

Rank and Service	Single			Married		
	Non-specialist	Junior Specialist	Senior Specialist	Non-specialist	Junior Specialist	Senior Specialist
	£	£	£	£	£	£
Acting surgeon lieutenant	483	—	—	821	—	—
Surgeon lieutenant ..	593	—	—	930	—	—
After 2 years in rank	647	—	—	985	—	—
„ 3 „ „ „	693	784	—	1,031	1,122	—
„ 4 „ „ „	821	912	—	1,158	1,250	—
„ 6 „ „ „	876	967	—	1,213	1,304	—
Surgeon lieutenant-comm.	1,003	1,095	—	1,341	1,432	—
After 2 years in rank	1,113	1,204	1,332	1,450	1,542	1,669
„ 4 „ „ „	1,222	1,314	1,441	1,560	1,651	1,779
„ 6 „ „ „	1,277	1,368	1,496	1,615	1,706	1,834
Surgeon commander ..	1,332	1,423	1,551	1,715	1,806	1,934
After 2 years in rank	1,441	1,533	1,660	1,825	1,916	2,044
„ 4 „ „ „	1,551	1,642	1,770	1,944	2,035	2,163
„ 6 „ „ „	1,606	1,697	1,825	1,989	2,080	2,208
Surgeon captain ..	1,733	1,733	1,843	2,117	2,117	2,226
After 2 years in rank	1,788	1,788	1,898	2,171	2,171	2,281
„ 4 „ „ „	1,843	1,843	2,007	2,226	2,226	2,390
„ 6 „ „ „	1,898	1,898	2,007	2,326	2,326	2,436
„ 8 „ „ „	2,007	2,007	2,007	2,436	2,436	2,436
Surgeon rear-admiral ..	2,190	2,190	2,190	2,664	2,664	2,664
Surgeon vice-admiral ..	2,737	2,737	2,737	3,212	3,212	3,212

These rates of pay do not apply to officers entered for National Service only. The married rates shown apply only to officers over the age of 25. The marriage allowance for officers under 25 years of age is 56s. a week. Additional allowances are paid to officers when not accommodated or messed. Medical officers are also eligible for certain travelling and subsistence allowances, passages for wives and families, etc.

The maximum rates of retired pay are as under:

Rank	Retired at Age	Maximum Pension
Surgeon lieutenant-commander ..	48	£500
Surgeon commander	55	£675
Surgeon captain (under 6 years in rank)	57	£875
Surgeon captain (over 6 years in rank)	60	£1,000
Surgeon rear-admiral	On vacating office	£1,200
Surgeon vice-admiral	„ „ „	£1,400

Officers allowed to withdraw who are ineligible for retired pay will be eligible to receive gratuities. The gratuity on short service after four years' full pay is £600, and on permanent service a gratuity of £1,000 is paid after 10 years' full-pay service, and £50 for each complete year in excess

of 10. The maximum total gratuity payable is £2,350. Further information may be obtained from the Medical Department, Admiralty, Queen Anne's Mansions, St. James's Park, London, S.W.1.

Royal Army Medical Corps

The Royal Army Medical Corps offers many opportunities for professional work and for training as specialists, alike for regular officers and short-service officers. The service of a regular officer is followed by retired pay and of a short-service officer by a gratuity. New and improved conditions of service in the Royal Army Medical Corps were introduced with effect from October 1, 1953. In the R.A.M.C. a regular officer can have a life career and retire on pension. Service up to the age of 57 is open to 75% of regular medical officers, and 5% of these can continue until the age of 60. After retirement officers may continue up to 65 years of age as civilians in retired pay appointments with the R.A.M.C. Short-service officers in the Corps are provided with a short career followed by retirement with a gratuity. The basic commission is for eight years, of which any period from two years (or, for those with a National Service liability, three years) can be spent on the active list, and the balance with the Regular Army Reserve for officers. Service in the Regular Army Reserve entails no annual training.

Medical practitioners who are British subjects or subjects of the Irish Republic are eligible for a regular commission if they are under 33 years of age and for a short-service commission if they are under 45. Approved applicants are appointed in the rank of lieutenant, but those with civilian experience after full registration can be granted an antedate up to seven years, which counts for increments in pay and promotion. Promotion is to captain after one year; to major after eight years' reckonable service, and to lieutenant-colonel and colonel by selection after approximately 17 and 23 years' reckonable service.

The total annual income for each rank is as follows:

Rank and Service	Single			Married		
	Non-specialist	Junior Specialist	Senior Specialist	Non-specialist	Junior Specialist	Senior Specialist
	£	£	£	£	£	£
Lieutenant	762	—	—	900	—	—
Captain	872	—	—	1,009	—	—
Captain after 2 years ..	926	999	—	1,064	1,137	—
Major	1,282	1,355	1,501	1,420	1,493	1,639
Lieutenant-colonel ..	1,666	1,739	1,885	1,794	1,887	2,013
Colonel	2,067	2,067	2,177	2,196	2,196	2,305
Brigadier	2,396	2,396	2,396	2,515	2,515	2,515
Major-general	2,634	2,634	2,634	2,743	2,743	2,743
Lieutenant-general ..	3,181	3,181	3,181	3,291	3,291	3,291

Increments of pay are given at two-year intervals. The total income is based on the assumption that single officers are not accommodated in a military mess nor receiving rations of any kind and that married officers are not accommodated in Government quarters or Government-hired accommodation, are over 25 years of age, and are not receiving rations. After appointment to a regular commission from short service, National Service, or direct from civil life, officers receive a special grant of £1,500 (taxable) on having completed one year's satisfactory service as medical officers. Regular officers earn retired pay at the following rates:

Rank for Retired Pay	Maximum Rate of Retired Pay	No. of Years' Service	Compulsory Retiring Age
Captain or below..	£400	20	53
Major	£500	22	53
Lieutenant-colonel	£675	24	55
Colonel	£875	26	57
Brigadier	£1,000	28	59
Major-general ..	£1,200	30	60
Lieutenant-general	£1,400	30	On completion of appointment

In addition to retired pay regular officers with 20 years' reckonable service receive a resettlement grant of £1,000 and short-service officers who do not go on to take a regular commission are eligible to receive gratuities of £240 for two years' service and £450 for three years' service, plus £150 for each completed year over three years. Widows' pensions are awarded provided the deceased officer had served a minimum period of 20 years (or 10 years if he was invalided or died whilst serving). These widows' pensions are awarded at rates varying according to the rank of the officer, from £110 a year for captain or lieutenant to £350 for lieutenant-general. If an officer's death is due to service the widow's pension is paid regardless of the officer's length of service.

Every year during their service officers are eligible for 42 days' leave on full pay and allowances without the necessity of providing locumtenents, and they have three free travel warrants. If serving overseas for three years a maximum of 75 days' leave, including disembarkation leave, can be earned. Officers are required to serve in any part of the world. The normal tour of duty either at home or overseas is three years. Further information can be obtained from the War Office (A.M.D.I.), Room 130, Lansdowne House, Berkeley Square, London, W.1.

Professional Training of Army Officers

Medical officers commissioned in the R.A.M.C. receive postgraduate training at the Royal Army Medical College, Millbank, London, S.W.1. This college has a director of studies and tutorial staff for the teaching of Army health, pathology, tropical medicine and entomology, military surgery, Army psychiatry, radiology, dermatology, and venereology. Regular R.A.M.C. officers between their fifth and eighth years of service pass through the senior officers' postgraduate course of professional studies. Those who satisfy the college council that they are suitable may proceed to individual specialist training for one year.

The department of Army health at the college provides facilities for special study in the maintenance and enhancement of the health of the Army. Officers intending to specialize in Army health are given the opportunity of taking the D.P.H. during their specialist course and are assisted in obtaining their D.T.M.&H. or D.I.H. The department of pathology provides lectures, demonstrations, and practical classes covering laboratory diagnosis and pathological aspects of general, tropical, and preventive medicine and military surgery. The syllabus of the department of military surgery covers both general and regional surgery and includes the surgery of tropical diseases and the management of surgical conditions peculiar to service both at home and abroad.

The Medical Branch of the R.A.F.

The Royal Air Force offers an attractive career to fully registered men and women medical practitioners who are British subjects or citizens of the Irish Republic. Normally, the upper age limit for applicants is 33, but older applicants may be considered. Appointment is usually to short-service commissions for three, four, or five years in the first instance, each of which may be extended to complete a maximum period of eight years. Exceptionally suitable candidates may be appointed to permanent commissions direct from civil life. Short-service officers may apply for permanent commissions at any time during their service.

The Air Council attach great importance to attracting to the Royal Air Force the right type of medical officer, since the safety and efficiency of the Air Force depend to a peculiar degree on its Medical Service. Medical practice in the Service brings officers into contact with flying, parachuting, mountain rescue, and air evacuation of sick and wounded, as well as with the clinical specialties and the treatment of Service families. There are, in addition, opportunities in aviation medicine, physiology, hygiene, and industrial medicine.

Officers serving on permanent commissions may be allowed to proceed on study leave with full pay and allowances in order to take approved postgraduate courses, for which tuition fees on an approved scale may be granted. A full career is possible in the clinical specialties, and accelerated promotion can be earned by professional or scientific distinction. Officers having experience or aptitude in a specialty may be employed on specialist duties and subsequently earn recognition as Royal Air Force specialists.

The antedating of seniority up to a maximum of seven years may be admissible for recognized civil experience. This antedating counts towards pay, seniority, and promotion. The normal rank on appointment is flying officer, with promotion to flight lieutenant after one year's reckonable service, to squadron leader after eight years' reckonable service, and to higher ranks by selection. Officers with more than a year of civil experience since full registration will be promoted to the appropriate higher rank, with retrospective respect to the date of entry, immediately they have completed a short introductory course.

Officers appointed to permanent commissions will receive a grant of £1,500 (subject to income tax) after one year's satisfactory service, and they will be entitled to retired pay and other benefits after completion of service.

Short-service officers will, on completion of their commission, be paid a tax-free gratuity at the rate of £150 for each year of satisfactory service. Arrangements exist to preserve their superannuation rights under the National Health Service (Superannuation) Regulations, 1950.

Further information can be obtained from the Under-Secretary of State for Air, Air Ministry, M.A.1(P), Awdry House, Kingsway, London, W.C.2.

SAFEGUARDS FOR THE DOCTOR AGAINST LITIGATION

One of the duties impressed upon the young practitioner immediately on qualification is to join a defence society. The increasing number of actions against doctors since the coming of the National Health Service gives added point to this precaution. It is not only the general practitioner who should thus safeguard himself, but also the member of a hospital staff. However careful a practitioner may be, he is never immune from the chance or accident which may involve him in litigation or the threat of it, and damages and costs are awarded on such a scale that a single successful action may ruin him financially; even an unsuccessful action may cause him heavy expense, anxiety, and perhaps some loss of reputation.

The Medical Defence Union (Tavistock House South, Tavistock Square, London, W.C.1) has a membership of nearly 41,000 practitioners. The Union accepts as members medical and dental practitioners, including provisionally registered practitioners, and there is special provision for the protection of overseas practitioners practising in any part of the world, with the exception of America. Since October, 1953, newly elected members pay their second and subsequent subscriptions on the anniversary date of application for membership, whilst members elected previously continue as heretofore to pay their subscriptions on January 1 in each year. The volume of work of the Union has increased materially during the past year. It provides advice and financial indemnity for any member concerned with or involved in medical litigation raising questions of professional skill or, more commonly, based upon an allegation of professional negligence. The accumulated funds are £158,526. The cost of litigation and settlements in court is increasing yearly. Since its foundation the Union has spent half a million pounds in the payment of damages and costs incurred in protecting members.

The Medical Protection Society (Victory House, Leicester Square, London, W.C.2) has a membership of over 29,000. Membership is open to registered medical and dental practitioners, including those practitioners who are provisionally registered under the Medical Act, 1950. There are special provisions for members practising overseas and also for practitioners who visit the United Kingdom for postgraduate work. Members are afforded advice and assistance in all matters of professional difficulty, with unlimited indemnity against legal expenses incurred in defending and conducting cases on their behalf, and also against costs and damages in those cases in which adverse verdicts result. This indemnity is secured by financial resources exceeding £150.000 and a reinsurance with Lloyd's underwriters. From year to year the work of the Society increases steadily, and larger amounts of costs and damages are paid on behalf of members.

The Medical and Dental Defence Union of Scotland (105, St. Vincent Street, Glasgow, C.2) has a membership of about 7,700. As with all other defence unions, there has been a considerable increase in the number of claims, although it has been possible in some of these to make a successful defence. The policy of the council has always been to give careful consideration to the interests of its members who have claims made against them for negligence, and to advise when requested regarding any business, legal, and professional matters arising from their practice.

Advice on Insurance

The Medical Insurance Agency (B.M.A. House, Tavistock Square, London, W.C.1) is a recognized agent of all the leading insurance offices, and is thus able to obtain for members of the medical profession the best terms available in the insurance market at any given time. The Agency is conducted on a non-profit basis and advises on all forms of insurance. Benefits of a special character have been arranged with leading British offices to supplement N.H.S. superannuation schemes. Special terms exist for the purchase of houses, equipment, and cars. The Agency has been the direct means of benefiting medical charities to the extent of over £125,500.

DIPLOMAS IN PUBLIC HEALTH AND TROPICAL MEDICINE

A full-time course in public health, lasting for nine months and beginning in October, is offered by most of the universities. At the University of Durham the first part-time course for the D.P.H. came to a successful conclusion in March, when all the eight candidates passed the examinations for the diploma. The new course will begin in October and will extend over five academic terms. Examinations for the C.P.H. will be held in March, 1955, and for the D.P.H. in March, 1956. It is stated that the Newcastle Regional Hospital Board and the local health authorities have been most co-operative in making available suitable part-time posts, the holders of which have been able to attend the courses.

At the University of Edinburgh there are courses of instruction of three months' duration for the C.P.H. and a further six months for the diploma. For the Diploma in Tropical Medicine and Hygiene the course of instruction is in two parts, each of three months' duration.

Bristol University grant a Diploma in Public Health and courses are held when sufficient numbers of candidates apply, but there is difficulty sometimes in organizing such courses because of lack of applicants. A full-time course for the D.P.H. will begin in October, 1954.

At Liverpool there are two courses leading to the D.T.M.&H. each session, beginning in September and January. The University of Leeds grants a Diploma in Public Health for which there is a part-time course extending over five terms, the certificate being taken after two terms. Courses in preparation for the D.P.H. are held at Manchester. The Royal Army Medical College, Millbank, London, is a recognized teaching institute for the D.P.H. and the D.T.M.&H.

No examinations for the D.P.H. were held in 1953 by the Universities of Birmingham, Cambridge, Oxford, Sheffield, and Dublin, nor by the Scottish and Irish Conjoint Boards.

The results of the examination for the Certificate in Public Health showed a total of 227 passes and 28 rejections, and for the Diploma in Public Health, Sanitary Science, or State Medicine, 156 passes and 16 rejections. The largest number of passes (44) was in the University of London, followed by the National University of Ireland (26) and the English Conjoint Board (25).

With regard to Commonwealth Diplomas in Public Health, no diploma is at present granted in the States of Queensland, South Australia, and Victoria, nor in any of the provinces of Canada to which Part II of the Medical Act, 1886, applies, nor in Ceylon or Malta. Provision for the granting of the D.P.H. is made in certain of the universities in New South Wales, New Zealand, South Africa, India, and Pakistan, but no application for the recognition of any such diplomas has as yet been received by the General Medical Council. In the Universities of Sydney and Capetown the relevant regulations are under review. The University of Hong Kong does not grant a Diploma in Public Health, but grants an M.D. which may be taken in State Medicine, and is already recognized by the General Medical Council. The D.P.H. of the University of Malaya has just been recognized, and the first diplomas will in the ordinary course be awarded during the present year.

London School of Hygiene and Tropical Medicine

The work of the London School of Hygiene and Tropical Medicine (Keppel Street, Gower Street, W.C.1) is organized in ten main departments—namely, applied physiology, bacteriology and immunology, biochemistry, clinical tropical medicine, entomology, human nutrition, medical statistics and epidemiology, parasitology, public health, and the Ross Institute of Tropical Hygiene. The course for the University of London's postgraduate Certificate and Diploma in Public Health, designed primarily for practitioners who intend to enter the public health service in Great Britain, begins in October each year and lasts for nine months. The examination for the certificate is held at the end of three months. In addition to the subjects covered by the D.P.H. syllabus the students are entitled to choose for special study occupational health ; tropical hygiene ; child health ; medical statistics and epidemiology ; environmental control. The industrial health lectures and practical work are recognized both by the Conjoint Board and by the Society of Apothecaries as fulfilling in part the requirements for entry to the D.I.H. examination.

The course for the University of London postgraduate Diploma in Bacteriology provides advanced instruction for graduates in medicine who intend to follow a career in bacteriology. The course begins in October and lasts for nine months. The course for the Conjoint Board's D.T.M.&H. is of five months' duration and is held twice a year. The course for the University of London academic postgraduate C. and D.T.M.&H. is designed to give advanced training. There is a preliminary course of not less than four months, commencing at about the beginning of October each year. The final course of not less than four months consists of advanced study in one of three fields—medical biology (parasitology and entomology), clinical tropical medicine, and tropical hygiene.

A course in statistical methods and their application in medicine and a course in medical statistics and epidemiology commence each year in March and last for about four months. In each course lectures and demonstrations are given twice weekly and the courses are so arranged on different days of the week that they can be taken in conjunction. Persons without a medical qualification can be accepted.

A new short course in environmental control will start in September. Thereafter there will be two courses a year, each of ten weeks' duration, beginning in March and September. Although intended primarily for health inspectors from abroad, the course is so planned as to be of value to medical officers and others interested in the health aspects of environmental control both at home and abroad.

Liverpool School of Tropical Medicine

Men and women students of any nationality who hold a medical qualification approved by the University are admitted at the Liverpool School of Tropical Medicine (Pembroke Place, Liverpool) to examination for the D.T.M.&H. Other students are also admitted to special courses in parasitology and entomology. For the diploma two complete courses of instruction, each lasting about three months, are given. The examination is held twice a year, in December and April, and consists of two papers on tropical medicine (including pathology and bacteriology), one on parasitology, one on entomology, two on tropical hygiene and related subjects ; and practical and oral examinations in tropical medicine, parasitology and entomology, and tropical hygiene. The dates of the courses are September to December, 1954, and January to April, 1955. The School also gives courses in public health, parasitology, and entomology for students taking the D.P.H.

Royal Institute of Public Health and Hygiene

The Royal Institute of Public Health and Hygiene offers courses for the examination of the Conjoint Board of the Royal College of Physicians of London and of the Royal College of Surgeons of England for the certificate in public health, starting annually in March and October. This leads to the courses for both the Diploma in Public Health (in January and August) and the Diploma in Industrial Health (in February and July). Candidates desiring a course for either diploma of the Conjoint Board are required to produce evidence of being in possession of a recognized Certificate in Public Health. Any of the courses may be taken whole-time or part-time. The next course for the Certificate in Public Health will begin on October 1. Regulations and syllabuses and full information may be obtained from the secretary of the Institute, 28, Portland Place, London, W.1.

The Society of Medical Officers of Health

The Society of Medical Officers of Health (Tavistock House South, Tavistock Square, London, W.C.1) is a body of medical officers engaged in public health work. It has 14 branches distributed throughout Great Britain and Northern Ireland, and ten groups. These branches and groups meet regularly to discuss the medical and administrative aspects of preventive medicine. The Council of the Society, representative of the branches and groups, is the governing body in respect of policy and finance and its views are requested by Government departments and other bodies concerned with the wide field of public health. It examines all legislation concerned with public health and maintains relations with the public health departments of the universities and local government authorities.

There is reciprocal representation on the Public Health Committee of the British Medical Association and the Council of the Society, and the Public Health Committee acts in conformity with an agreement with the Society of Medical Officers of Health under which medico-political activities are undertaken by the Association.

PROFESSIONAL SOCIETIES

British Medical Association

The British Medical Association (Tavistock Square, London, W.C.1) was founded in 1832 to promote the medical and allied sciences and to maintain the honour and interests of the medical profession. Its membership at the beginning of the year was 67,500, and it covers 85% or more of the working profession of this country. It is recognized by the Government, local authorities, and other organizations as the representative body of the profession. Members are elected by the Council of the Branch for the area in which they reside or, if non-resident in a Branch area, by the Central Council. The Association has important Branches in Australia and New Zealand and flourishing units in many

parts of the British Commonwealth. The Medical Associations of Canada and South Africa are affiliated with the B.M.A.

The subscription rates are as follows:

Members Resident in Great Britain or Northern Ireland

	Yearly
Ordinary subscription	£6 6s.
Not less than 40 years' membership	£2 2s.
Permanently retired from practice with not less than 10 years' membership	£2 2s.
Whole-time non-professorial member of the teaching staff of a university or medical school or engaged whole-time in special research	£3 3s.
Member occupying a chair in a university or medical school as a non-clinical professor	£3 3s.
Newly qualified practitioner elected within two years from date of qualification for provisional registration under the Medical Acts:	
Up to two years from date of such qualification	£2 2s.
For following three years	£3 3s.
Husband and wife residing together	£7 7s.

Members Resident Outside Great Britain or Northern Ireland

£2 2s., plus local Branch subscription (if any).

Service Members Wherever Resident

Officers on the active list of any of the medical branches of the armed Forces	£3 3s.

Lower Income Groups of Salaried Members

Any member engaged in full-time salaried employment, the salary of which is not more than £1,500 per annum	£4 4s.

(This concession is without prejudice to the position of members entitled to pay a reduced membership subscription under any of the categories set out above.)

A new Member admitted from July 1 in any year pays half the subscription for that year.

No subscription is payable by a Member who has completed 50 years' membership.

The policy of the Association is determined by the Representative Body. A Constitution Committee has been set up to consider the reorganization of this body, which, with the growth of the Association, has become somewhat unwieldy in size. The Council is the executive body of the Association and its composition is carefully arranged to ensure regional, national, and overseas representation, and representation of special services. The principal work of the Association is carried out through standing and special committees. The Central Consultants and Specialists Committee acts with the Royal Colleges in all matters arising under the National Health Service affecting consultants and specialists. The General Medical Services Committee acts as the executive of the Conference of representatives of Local Medical Committees and is the recognized mouthpiece of the profession so far as concerns the services of general practitioners under the Act. The Public Health Committee, which has a working agreement with the Society of Medical Officers of Health, deals with all matters relating to the public health service. Other committees of the Association are concerned with private practice, medical ethics, and medical science, and there are joint committees with other bodies for the consideration of matters of mutual interest.

The privileges of members of the Association include participation in all its activities, central and local, the weekly receipt of the *British Medical Journal* and its *Supplement*, the use of the Association's house and library at Tavistock Square, and the help of a highly skilled and experienced staff at Headquarters. In addition to the *British Medical Journal* the Association publishes a number of specialist journals and abstracts. The library contains some 65,000 books, and has a turnover of 1,600 journals regularly available. It has a large lending and circulating service and is available for reading and reference purposes to members at the Association House.

Medical Practices Advisory Bureau

Some six years ago the Association set up a Medical Practices Advisory Bureau, which functions at Headquarters under the direction of a medical member of the secretariat. It is a central source of information concerning openings in the various fields of medical practice; introduces partners, assistants, and locumtenents; and advises on all individual and personal problems associated with the entry into and the carrying on of the profession. The facilities of the Bureau are available to any doctor and are free of charge to members of the Association. Inquiries should be addressed to the medical director of the Bureau either at the head offices of the Association in London or at the branch offices, 33, Cross Street, Manchester, or 7, Drumsheugh Gardens, Edinburgh.

The Empire Medical Advisory Bureau and the International Medical Visitors Bureau

The Council of the Association has also set up at Headquarters, Tavistock Square, two organizations, one for welcoming and providing a personal advisory service for practitioners visiting this country from the Dominions and Colonies, and the other for performing a similar function for practitioners from countries outside the Commonwealth.

The Empire Medical Advisory Bureau invites all medical visitors from Commonwealth countries to get in touch with it, if possible before arrival in this country, and to call at the Bureau as soon as possible after arrival and talk over with the medical director (Brigadier H. A. Sandiford) any points on which they may need advice or assistance. Last year more than 1,100 inquirers made use of the Bureau and over 2,000 old and new visitors called there. A pleasing feature is the increasing number of inquirers year by year who get in touch with the Bureau before leaving their own countries and are thus enabled to make most satisfactory arrangements for their arrival. Personal contact is maintained with medical schools, postgraduate institutions, hospitals, and other bodies able to assist overseas visitors in the educational field. A register of suitable hotels and lodgings is maintained by the Bureau, and general information is afforded concerning travel, customs duties, facilities for sport, exhibitions, and the like.

The other organization is the International Medical Visitors Bureau, also located at B.M.A. House, under the directorship of Brigadier Sandiford. Here again information is obtainable on postgraduate education, visits to hospitals and clinics are arranged, and assistance is given to visitors in finding accommodation and in other respects.

Medical Women's Federation

The Medical Women's Federation (Tavistock House North, London, W.C.1) works closely with the British Medical Association, and is represented by a woman member on the General Medical Services Committee. The Federation is the only professional organization consisting solely of medical women, and is thus in a position to represent the interests of women doctors and to deal with the problems affecting them as a minority in the profession. It also considers and investigates medical matters of special concern to women doctors. The Federation has active local associations all over the kingdom, including a large London association, and an association of its overseas members. These associations meet regularly, and the *Journal* of the Federation is published quarterly for private circulation among its members.

BRITISH MEDICAL STUDENTS' ASSOCIATION

During the early years of the war there was founded an organization of medical students. Its beginnings were uncertain, but it soon got into its stride and is now a vigorous body, comprising over 90% of the medical students of the country. It provides a link between the students in the different universities and hospitals, and also between British students and their colleagues in other countries. It presents the medical students' point of view to the medical profession, Government departments, and other interested bodies. It is run by an executive committee elected at an annual

general meeting and by four regional councils. Clinical and preclinical conferences are arranged from time to time, and these are appreciated not only for their academic interest but also for the opportunities which they provide for meeting fellow students from the different medical schools. It publishes, once a term, a journal, also the B.M.S.A. Diary, and an annual list of vacation appointments.

The British Medical Students' Association is keenly interested in the grants problem of its members, and cases of hardship are investigated. A difficulty which is now being encountered is the failure of some local authorities to implement the Ministry's recommendations for the payment of senior scholarships and also the failure of many authorities to pay an extra maintenance allowance to the clinical student to cover extra time at hospital during normal vacations. It is watching closely for any hardship caused by the Medical Act, 1950, and the pre-registration year. There is growing concern over the allocation of pre-registration posts. The association is represented on the Medical Students and Newly Qualified Practitioners Subcommittee of the B.M.A., in which considerable progress has been made in clearing up the problems of the newly qualified.

Other Activities

The B.M.S.A. takes great interest in the British Students Tuberculosis Foundation, of which it is a sponsoring body. It is also conducting, with the British Dental Students' Association, a survey of the incidence of tuberculosis amongst medical and dental students in the country. In the field of sickness and other insurance it has made arrangements with an insurance agency, set up by the profession for its own guidance, for the development of a special section to advise medical students.

An international secretariat looks after students wishing to visit medical schools and centres abroad, and also arranges for hospitality for foreign medical students visiting this country. The association, with similar organizations in Scandinavia and the Netherlands, has formed the International Federation of Medical Students' Associations, which is recognized by the World Medical Association and by Unesco. A delegation from the association will be sent to the next General Assembly of the International Federation, which is being held in Rome in September, concurrently with the General Assembly of the W.M.A.

During the past year the annual general meeting was held in Bristol, when Professor G. Gordon Lennon was elected honorary president. A clinical conference was held in Liverpool. Delegates were sent to the First World Conference on Medical Education, held in London last September. Close co-operation is maintained with the College of General Practitioners, and arrangements have been made for lectures by members of the College to student audiences in the medical schools. A conference of editors of medical school journals and gazettes was held in London during June.

The foremost of the year's activities has been the organization of the Students' International Clinical Conference, held in July, 1954, when delegates came from all parts of the world to London, Birmingham, and Edinburgh. Over 100 members of the association went to Denmark for the summer schools arranged by the Danish Medical Associations at the Universities of Aarhus and Copenhagen.

The address of the British Medical Students' Association is B.M.A. House, Tavistock Square, London, W.C.1.

ATHLETIC ACTIVITIES

Some reports from medical schools add a postscript about athletic activities. These may sometimes be regarded as provision for the release of the students' superabundant energies, but physical training and recreation programmes are important in medical as in all education, developing habits of healthful living, quickness of sensory response, and co-ordination of muscular action. To the future doctor they will be of value, not only for his own physical fitness but for teaching positive health to his patients. The achievement of Roger Bannister has lately drawn attention to the medical student in athletics.

In most of the London medical schools athletics is provided for and encouraged, although perhaps only one of the schools—King's College Hospital at Denmark Hill—has its sports grounds within a few minutes' walk of the hospital and the hall of residence. Considerable improvements have lately been carried out in the pavilion on the sports ground of King's College Hospital at Dog Kennel Hill. University College Hospital Medical School has also during the last year completed its sports pavilion at Hendon, and this will be opened in September by the chairman of the court of London University, Sir Norman Birkett. The sports ground, by the way, is named after the vice-chairman of the court, Sir Archibald Gray. At the Royal Free Hospital School of Medicine great progress has been made in preparing a new athletic ground at Enfield for use in the coming season. During the past year two members of the rowing club at the Royal Free have gained places in university crews, and a junior four was successful in the United Hospitals regatta. In all, seven students of the hospital have gained full colours in university teams, and one half-colours. At St. George's Hospital the various athletic clubs are well supported, and individual students have achieved distinction in athletics, swimming, and on the river.

The story is continued in many provincial schools. At Newcastle the numerous athletic clubs have continued their activities with varying degrees of success in inter-collegiate and local league fixtures. The Medical Rugby Club was unfortunate in losing the final of the Northumberland Rugby Union senior challenge cup competition, having held the trophy for the two previous years.

Nova et Vetera

THE DEAN OF THE SCHOOL

At the head of nearly all the medical schools in this country are officers who are called "deans"; sometimes the term is "provost," sometimes "warden," but the use of "dean" is far more general. The word "dean" in the sense of president of a department of study in a university is centuries old. Originally the word meant one having authority over ten men, as over ten soldiers in a camp or ten monks in a monastery. The word is even used in the Vulgate for the rulers of tens mentioned in the eighteenth chapter of *Exodus*, and, of course, its predominant use is ecclesiastical. No one can say when it first came to be applied specifically to the head of a medical school. Just over a hundred years ago in the minutes of the committee of St. Thomas's Hospital it is stated: "The committee having been summoned for the purpose of taking into consideration the appointment of a dean . . . it was agreed that some one member of the medical school was for each year to act in the capacity and with the title of dean."

In the United States the term has come to be used as synonymous with registrar or secretary, though schools of medicine there have had some famous deans. One name in particular comes to mind, that of William H. Welch, who was the first dean, and remained so for many years, of the school of medicine at Johns Hopkins. In Britain many of the men who have become the most eminent in medicine were in their time deans of their schools, and many retained their deanship long after becoming eminent.

Behind the Scenes

It is not too much to say that the quality of a school depends upon the personality and energy of the dean more than upon any other single factor. The school derives its intellectual and spiritual atmosphere from him. Professors and lecturers come and go, but the dean is always behind

the scenes. He is rarely seen by the public except when he gives his report at the inaugural meeting of the session, but his hand is felt, or should be, in every development. To be successful as a dean he must have a continuing interest in the school, and not only in the school but in the university as a whole, and outside the university, in events which bear upon medical education, medical progress, and medical service. He is constantly called upon to assess individual merit and capacity and make personal judgments. He must himself remain a student, although so much a senior. He must learn along with the school. He will arrange the school programme so that it brings in the occasional help of part-time people as well as the whole-time staff. He will not forget the stimulus of the unexpected. He will be interested in medical education in itself, realizing, as Emerson said, that the secret of education lies in respecting the student. Above all, he must be able to appreciate the point of view of the young, to make due allowances for their follies and extravagances, to encourage their good endeavours, and try to forecast their future.

These comments on an often forgotten but most important office are prompted by the fact that in assembling some of the material for this Educational Number we had occasion to write to the deans of all the medical schools. Their replies invariably showed how proud they were of their schools and how interested personally in their human product. The deans are the key-men in medical education.

Correspondence

Because of the present high cost of producing the Journal, and the great pressure on our space, correspondents are asked to keep their letters short.

Blood Groups and Disease

SIR,—The careful and stimulating paper by Professor Ian Aird and his colleagues in the *Journal* of August 7 (p. 315) emphasizes the need for adequate controls in any study on the relation of blood groups to disease. In the course of his paper Professor Aird states that adequate population controls are not available for different areas in Scotland. Lest any worker contemplating work in this important field is deterred by this statement I wish to make it clear that adequate control figures are available. Just as the National Blood Transfusion Service in England and Wales provides information on blood group frequencies in the population of the areas concerned, similarly in Scotland this information can be derived from the records of the Scottish National Blood Transfusion Association. As far as Glasgow and the Western Region of Scotland is concerned, I am pleased to provide control figures for any area within the region to any investigator in this field.

The importance of making observations in Scotland is illustrated by my own experience. At the suggestion of Professor Aird and through the kind co-operation of my clinical colleagues I have collected 299 cases of gastric carcinoma in each of which the diagnosis has been established by histological examination and the ABO blood group determined by a reliable laboratory. These cases are all from the city of Glasgow, and the control blood group figures are from an unbiased series of 7,418 new donors within the city. The distribution of groups is as follows:

	O	A	B	AB
Gastric carcinoma (299 cases) ..	159 (53·2%)	104 (34·8%)	30 (10·0%)	6 (2·0%)
Control (7,418 donors)	3,853 (51·9%)	2,485 (33·5%)	817 (11·1%)	263 (3·5%)

There is no significant difference between the disease series and the controls (comparing the proportions of groups O and A only, $\chi^2=0.001682$, $P=0.95$). In view of the clear demonstration by Professor Aird and his colleagues that persons of group A have a greater susceptibility to carcinoma of the stomach than those of other blood groups, it seems important to collect more information on this particular disease in Scotland. On the other hand, the greater susceptibility of persons of group O to peptic ulcer demonstrated by Professor Aird is shown in a small series collected in Glasgow. Among 184 proven cases of peptic ulcer the distribution of groups was O, 118 (64.1%); A, 43 (23.4%); B, 14 (7.6%); AB, 9 (4.9%). Even this small series shows a significant difference from the control (comparing the proportions of group O and A only, $\chi^2=9.8$, $P<0.01$).—I am, etc.,

JOHN WALLACE,
Regional Director,
Glasgow and West of Scotland
Blood Transfusion Service.

Glasgow, C.1.

Contact Lenses

SIR,—I should like to make a few comments on your interesting annotation on this subject (*Journal*, August 7, p. 352). Many hear only of the failures and not of the successes in the use of contact lenses, whereby the patient is greatly helped by enhanced visual acuity and often psychologically. In my experience, as good results are obtained with ventilated plastic contact lenses as with glass ones. The glass contact lens is heavier than the plastic, and is much more easily broken. It requires re-polishing, usually yearly, and, as this causes thinning of the optic segment, a new lens may be required after a few years. Also, many more fittings are required when glass is used and this is a serious economic and practical drawback. It is possible to reduce the number of fittings to a minimum consistent with the best fit by the use of transparent acrylic pre-formed contact lenses with toroidal haptic segments. A scratch on a glass contact lens means the formation of an uneven, splintered channel, whereas a scratch or "sleek" on the rather softer plastic material is evenly filled with tears and there is no interference with optical continuity.

Both glass and plastic contact lenses would be damaged by any great accidental heat, but I can hardly believe that there is a climate hot enough to cause plastic lenses to lose their shape. The contact lenses which I fit are moulded complete with the required power by means of dies. The plastic pellet is softened at a high temperature and compression by air is applied to the dies; the formed lens is subjected to rapid cooling whilst compression is maintained. The completed lens is composed of an inert, plastic "memory-free" substance which is incapable of distortion at any reasonable temperature. Dies-moulded plastic lenses, whether of the spectacle or contact type, are superior optically to ground lenses. In a monograph on hospital contact lens work I referred[1] to eye sensitivity and how it varied in different people, the "long-wearers" of good fitting lenses having less sensitive corneae and relaxed eyelids. There is usually diminished sensitivity in hospital patients who have had eye surgery, and who are used to eye examinations and treatment. With regard to discomfort in stuffy, brightly lit surroundings, many wearers get through a long period by wearing one lens at a time.

No reference was made in your annotation to an important development in contact lens design which was evolved by Mr. K. M. Tuohy, of California, U.S.A., several years ago. Many variations of the Tuohy corneal contact lens have appeared since, and research goes on in America, on the Continent, and in this country. This type of contact lens has no scleral segment and rests entirely on the cornea. It is kept in position by the curvature of the cornea, capillary attraction, surface tension, and the eyelids; it really "floats" on the lacrimal layer which covers the cornea. Veiling ensues from a tight peripheral fit. In size the corneal lens averages about 12 mm. in diameter and should keep within the limbal circumference. Recently, corneal lenses of approximately 9 mm. diameter have been introduced. The thickness of the centre of the lens varies with the power; the average is about 0.2 mm., and the lenses are

flexible. There are problems connected with the use of these lenses which space does not permit me to refer to here—for example, the difficulty with a spherical lens and an astigmatic cornea. The solution lies in the use of thin, diesmoulded corneal lenses produced by the same methods as haptic fitting toroidal contact lenses. The central area in this wider corneal lens remains spherical for about 8 mm., and the flatter peripheral band of approximately 2 mm. is moulded to the required toroidicity. A clinical investigation on corneal contact lenses was published by Conrad Berens and others in 1952.[2] In their conclusions they state that the corneal lens appears to be a definite advance in the design of contact lenses. It must not be worn beyond toleration point. Tolerance is related to corneal sensitivity and the incentive to wear it; keratoconus and aphakia cases usually tolerate the lens very well. 78.1% of patients were satisfied with the corneal lens, but there was corneal damage in 10%, and the authors agree that the fitting of these contact lenses should be done by or under the supervision of an ophthalmologist.

It would appear that a long-term study of the effects of these lenses on the corneal epithelium is necessary. Meantime, the correctly fitted and fenestrated contact lens, with the haptic resting on the sclera, corneal clearance and the air-bubble controlled so as not to interfere with optical continuity, may be guaranteed to give good wearing time and comfort to the majority of patients.—I am, etc.,

Hove. J. M. ANDERSON.

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[2] *Trans. Amer. ophthal. Soc.*, 1952, **50**, 55.

Fractures Complicating E.C.T.

SIR,—During the past twenty years I have been asked to give an orthopaedic opinion on such cases. In the very early days E.C.T. was usually carried out on an ordinary bed, with head and foot pieces: these occasionally led to impaction of the body in spasm between the two ends of the bed. From time to time this led to minor fractures of the spine, and dislocations of the jaw, shoulder, etc. The fractures of the spine, generally in the thoracic region, were fine linear ones, with no displacement: the majority of patients complained of a varying degree of minor pain in the region affected. Bed rest was sufficient, with no permanent deformity or other disability. The dislocations were reduced easily, and no ill effects resulted.

With the introduction of muscle-relaxing drugs it is now exceedingly rare to see such cases, and the public should no longer be apprehensive of electro-convulsive treatment, the name of which might well be altered to remove any remaining doubt from the minds of the patient and his relatives.—I am, etc.,

London, W.1. B. WHITCHURCH HOWELL.

SIR,—Dr. F. H. Corbitt's point (*Journal*, August 7, p. 361) is well made, but in making it he cites a series of over 8,000 "straight" electro-convulsant treatments. I said (*Journal*, February 9, 1952, p. 330) that "'straight' E.C.T. may be considered to be outmoded," but it would seem that not all psychiatrists agree; it would be interesting to know why.—I am, etc.,

London, W.1. LOUIS ROSE.

Organic Syndromes Presenting as Involutional Melancholia

SIR,—Many will be grateful to Dr. S. Smith for his article entitled "Organic Syndromes Presenting as Involutional Melancholia" (*Journal*, July 21, p. 274). This is a short but important paper which, as he writes, emphasizes the importance of looking for the organic accompaniments of the involutional process in psychiatric cases. The opinion that the temperamental and psychological forms of the reaction are derived from the basic personality conformation deserves to be more generally considered as of great clinical importance. It is refreshing to see the many factors which one by one at different times in psychiatric history have been emphasized as almost the sole causes of mental illness to the exclusion of the others brought together here, and the work of Nielson and Thompson[1] mentioned. This article corroborates our finding that different aetiologies may underlie conditions which are clinically similar in syndromic expression. Involutional melancholia repays study as the typical "go-between" syndrome in establishing classificatory status in psychiatric work. The more precisely we understand the underlying psycho-physiology suggested by cases as those presented, the more clearly will we be able to explain not only those we must now regard as primary but that large group with many common features which embraces the premenstrual tension syndromes, the pre-involutional and post-involutional syndromes, and the reactions of the aged.—I am, etc.,

Manchester, 8. DWIGHT L. MOODY.

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[1] *Engrammes of Psychiatry*, 1947, 1st ed. Thomas, Springfield, Ill.

Infant-feeding

SIR,—Some of the pronouncements in the "last minute cram" on infant feeding advertisement (*Journal*, July 17, advertisement p. 14) are surely outdated and only likely to lead to distressed babies, mothers, and doctors. Let me support this contention by comments on some of the paragraphs and quotations from recognized authorities.

(1) "Only one breast should be used at each feed" in certain cases at the end of a week: Dr. Charlotte Naish says that we must not try to reduce the milk supply, as this "nearly always overreaches itself."[1] In any case it is in the second week that the supply is likely to decrease as the mother gets up. Feeding from only one breast at a feed always decreases the total supply per day. (2) "On about the 4th day, the flow of milk should be established": This is a dangerously early date to give. Dr. Naish suggests the 8th day as the latest on which one must give up hope. (3) Test feed on the 5th day: Surely it is meeting trouble more than halfway to get a mother worried about the quantity of her milk if there are no indications of its deficiency. (4) "He should receive 2¼ ounces of milk in 24 hours for every pound of body weight": Perhaps this is a reasonable minimum, but it requires little experience of babies to teach one that their food requirements vary as greatly as those of adults. (5) "The child should gain 4–6 oz. per week": Dr. Naish considers 6 oz. the minimum and 8 oz. a "reasonable target." Illingworth[2] says 5 oz. may be "normal" but in certain circumstances 15 or 16 oz. may be the figure. (6) "*Signs of overfeeding* . . . constipation": Illingworth states that he has seen only one case of overfeeding in 20 years, and that baby was having 12 stools per day. While in Wickes's series of 503 healthy infants[3] there was only one real case of overfeeding and here again the motions were frequent.

If any students are seeking sensible advice on infant feeding I suggest that they read neither the standard textbooks nor advertisements, but the three publications from which I have quoted.—I am, etc.,

Wem, Salop. ARNOLD GEORGE.

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[2] *The Normal Child*, 1953. J. and A. Churchill, London.
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Obstetric Anaesthesia

SIR,—To general practitioners who, like Dr. A. H. Morley (*Journal*, July 31, p. 299), have had many years' experience of midwifery, chiefly domiciliary, it is a puzzle why anyone should want to deliver a patient in other than the lateral position, when this, to those accustomed to use it, has all the advantages. Even if it were true that in this position there was a risk of a strained back or slipped disk, could anyone compare this with that of giving an anaesthetic to an unprepared patient lying on her back? The suggestion that, instead of merely turning her on her side, she

should have her stomach washed out, is surely not meant to be taken seriously.

The very hot intrauterine douche which we were taught to use after manual removal of the placenta and for post-partum haemorrhage seems to have fallen out of fashion. We have found it a very present help both for the immediate emergency and in those cases where the bleeding, without being alarming, continued to be excessive over several hours. —I am, etc.,

Beckenham. W. MAXWELL PENNY.

SIR,—I hesitate to join in the discussion of obstetric anaesthesia, as I am only a general practitioner clinical assistant. However, I gave nearly all the obstetric anaesthetics at the Luton Borough Maternity Hospital between about 1934 and 1946. I used the rag and bottle method as taught to me by Dr. Ryan at St. Thomas's Hospital, using one part chloroform to 32 of ether. This is poured on as a stream and gives rapid induction, with quick relaxation of the jaw, so that an airway can be put in. We always delivered the cases on their sides, but this was hard work for the poor nurse, who knelt on the bed and had to hold up a leg. In spite of vomiting, no harm ever came. We had a primitive Boyle's apparatus, but it was never ready for use in the middle of the night and so I continued with the rag and bottle.

About 1946 the resident obstetrician (a lady) left and "up to date" males took over. All patients are now delivered on their backs and we use a Boyle's apparatus, mostly with gas, oxygen, trichlorethylene, and ether. In 1946 there were many articles about deaths from vomiting in forceps deliveries in the American press and I repeatedly warned the nursing staff not to overfeed the labouring ladies, and sure enough, shortly after, I had a death similar to those described by Dr. R. B. Parker (*Journal*, July 10, p. 65) in a patient who had been bullied to drink egg and milk against her will.

In my opinion delivery in the left lateral position is much safer for a patient who is likely to vomit. The rag and bottle with chloroform or a chloroform and ether mixture is easier in this position. The only advantage of a Boyle's apparatus is that oxygen can be pumped into the baby as well as the mother. It seems too that perineal tears are less common in the left lateral position, as presumably the sacrum can swing and routine episiotomy is not needed.—I am, etc.,

Luton. R. G. APTHORPE.

Child Guidance Clinic

SIR,—Many child psychiatrists will agree with Dr. J. Bierer's plea (*Journal*, August 7, p. 362) for the evaluation of treatment methods. In clinical practice I believe that there is a widespread move to more flexible use of the child guidance team than he implies, and various methods of group interview of the child and parents are in use. The group technique at the Social Psychotherapy Centre appears to me to have at least one considerable disadvantage. The child and his parents must have a considerable feeling at being faced by "the psychiatrist, the psychologist, the psychiatric social worker, play therapist, and one or two pupils" and I should not have thought that this group structure made diagnostic appraisal and therapeutic contact easy. I would also criticize his statement that "in the majority of cases the parents need treatment and not the children." This seems to me to be a rather dangerous way of expressing a complex inter-personal situation.—I am, etc.,

London, W.1. G. STEWART PRINCE.

Varicocele and Subfertility

SIR,—Mr. H. G. Hanley's (*Journal*, August 14, p. 413) acute powers of observation of "minute invisible arteries" in the region of the epididymis apparently do not extend to an exacting study of the literature. My observations[1,2] and those of others on the vascularization of the human testis were made on fresh post-mortem testes and not on "senile cadavers in the dissecting room." These observations have shown clearly that the testicular artery commonly divides into two branches, each of which is little less in diameter than the parent trunk, just before reaching the testis; very rarely does it divide into more than three branches, and occasionally it remains as a single artery until reaching the testis. Mr. Hanley's vessels, although invisible, are described as arteries presumably because they show arterial bleeding on section. The pressure and velocity of blood in the human testicular artery are still unknown; they are likely to be very low, and blood ejected from the cut artery would display weak arterial pulsations. It is therefore possible that the testicular artery itself is being cut, and, since it is an end-artery at the site of Mr. Hanley's attentions, this can only produce severe damage in the testis; epididymal vessels may also be severed, which, from Dr. E. W. Macmillan's[3,4,5] observations, is likely to have adverse effects on fertility. Depending on the site of operation in the vicinity of the epididymis, it is also possible that the vasal or cremasteric arteries may be damaged; while this might be innocuous for the testis, interference with the anastomoses between these arteries and the testicular artery may have severe effects. If the testicular veins are ligated at a site where the testicular artery is large enough to be seen and avoided, the operative procedure is much safer; the nearer the testis, the more likely the testicular artery is to be an end-artery. Size of the testis alone is no rigid criterion of the nature of spermatogenesis; until Mr. Hanley makes histological observations on sections of the whole testis his statement on the lack of atrophy following removal of accessory veins has no scientific value.

Perhaps Mr. Hanley has not considered the possibility of wartime immersion in Arctic waters; however, the reason for describing our experiments on cooling of the testis was to illustrate my criticism of the use of the term "radiator" applied to the function of a varicocele. If the adverse action of a varicocele is to be explained by radiation of heat to the exterior, then it can only cool the testis; it is therefore very important to know that a temperature of −6° C. or lower must be applied to produce permanent damage in the testis of an experimental animal.

Dr. H. A. Davidson's[6,7] observations, although of great importance, must be supported by exact scientific data on the levels of *intra-testicular* temperature in carefully controlled conditions of ambient temperature, and an accurate statistical analysis of the histology of the testis, sperm density, morphology, motility, etc., in the enumerated syndromes and control cases, before they can have more value than the hypotheses proposed by other workers in this field. —I am, etc.,

Liverpool R. G. HARRISON.

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7 *British Medical Journal*, 1954, **1**, 1378.

Acute Appendicitis in Childhood

SIR,—I was much interested in the paper on "Acute Appendicitis in Childhood" (*Journal*, August 14, p. 388). Diagnosis is indeed difficult at times, and Mr. F. Denis Hindmarsh has made valuable observations as to the cause of delay in admission to hospital. In the light of my own recent experiences in general practice, I should be grateful for further information regarding Mr. Hindmarsh's series of cases.

Within the last year, I have dealt with two cases which presented particular difficulty. The one, a boy of 21 months, complained of earache, which was found to be due to an otitis media. He was treated with penicillin, and within 48 hours earache had subsided and the ear appeared normal. However, some slight and intermittent abdominal pain now appeared, accompanied by low pyrexia, occasional vomiting, and some bowel looseness. No abdominal tenderness or guarding was found. These symptoms persisted, and on the fourth day of illness he was referred to a paediatric hospital for further opinion. The diagnosis of

appendicitis was not made there until the fourth day of admission, by which time abscess had formed. The other case, a girl of 18 months, had some abdominal pain and vomiting—neither severe—but remained ambulant, was not fretful, and was apparently living on a diet of chocolate as judged by the vomitus. Examination was negative apart from a low pyrexia, and she was referred to the paediatric department of a general hospital on the third day of illness. Again, diagnosis of appendicitis was not made until the fifth day of admission. It would appear, therefore, that, although these cases were under the care of experienced paediatricians, delay in diagnosis may also occur *after* admission to hospital.

I would like to ask Mr. Hindmarsh whether he has experienced such delay among his own series, and, if so, whether he feels, in retrospect, that diagnosis could have been made earlier. However desirable, is the diagnosis of appendicitis in childhood always possible within 24 hours? In my own first case, I suspect that the use of penicillin for the otitis media may well have masked signs which might otherwise have appeared.—I am, etc.,

London, N.16. B. STONE.

Rehabilitating the Disabled

SIR,—Your report on the rehabilitation and resettlement of disabled persons (*Journal*, June 26, p. 1490) prompts me to say how little the facilities offered by the post-1948 voluntary schemes for supplementing the National Health Service still appear to be realized. Some 3,500,000 citizens (not including dependants) regularly contribute from a penny to sixpence a week to such schemes, many of which include convalescent home treatment when not provided "free" under the National Health Service. Two large schemes restrict their benefits to convalescence, for which they only ask a penny a week. This is a pity when the vast majority of the contributors, who evidently attach importance to thrift and independence, are willing to pay considerably more for the range of benefits offered by most of the schemes.

Doubtless, many local authorities have not exercised their permissive powers under the N.H.S. Acts as regards convalescence, but, whether or not patients obtain convalescence through local authorities who normally assess them for payment towards the cost, the contributory schemes offering this benefit are prepared to do their part. Some schemes own convalescent homes, and others, on medical advice, are prepared to make all arrangements for contributors and their dependants to be sent to convalescent homes at little or no expense. As an example of enterprise in this field, the Bolton and District Hospital Saturday Council have opened two convalescent homes for women and one for men at Blackpool, Lytham St. Annes, and Southport since 1948. The Coventry and Warwickshire Hospital Saturday Fund have enlarged their home at Dawlish, and the Leicester and County Convalescent Homes Society is building a new convalescent home in Norfolk. The Mid-Southern Hospital Contributory Association (Reading) is shortly opening a home at Weston-super-Mare.

Citizens who join contributory schemes providing convalescent home facilities make themselves independent of the local authority means test, which is normally applied under Section 28 (2) of the 1946 Act, and they and their dependants become eligible for a number of other benefits supplementary and ancillary to the N.H.S. This Association would be pleased to advise any interested citizens on the subject.—I am, etc.,

Bristol, 1. JOHN DODD,
Hon. Secretary,
British Hospitals Contributory Schemes Association (1948).

A Mouthful of Wire

SIR,—The forceful letter from Miss Mabel E. Carter, a headmistress at Wirral (*Journal*, August 7, p. 361) emphasizes a lamentable lack of understanding between members of the team concerned with fostering the interests of our rising generation. Orthodontic treatment is necessary in extreme cases, and desirable in many others.

Patients suffering from extreme degrees of malocclusion of the teeth are more subject to dental disease than are their fellows, and are handicapped in life in many ways as a result of their deformity. Orthodontic treatment can lessen the incidence of dental caries and mitigate factors which predispose to gingivitis, thus providing increased longevity for the natural dentition.

The orthodontist must take all factors into consideration before undertaking any treatment, and must reduce his interference to the minimum. The co-operation of the child, the parents, and the school-teacher are essential to success. Provided treatment is justifiable, suitably conceived, and efficiently executed, then a little tolerance on the part of the school-teacher toward inconveniences caused is a small price to pay for the benefits which can accrue to the child.—I am, etc.,

Keston, Kent. G. A. KERR.

SIR,—As a surgeon-dentist who has recently retired after 41 years' private practice, I entirely endorse what Miss Mabel E. Carter stated in your issue of August 7 (p. 361). Further, let me cite end-results which have come to my notice, either with patients or friends.

On innumerable occasions I have seen sound teeth become carious and the gums unhealthy, due fundamentally to the utter impossibility of carrying out efficient personal hygiene in a mouth filled with appliances. Not only so, but the gums become inflamed and bleed readily, thus impairing proper mastication, which in turn may readily lead to digestive disorders. It is, however, most disconcerting, not only to the teenager (who has often developed an inferiority complex during the rectification process), but also to the parents, to find that not infrequently the teeth (by then probably heavily filled) have slowly but surely returned to their original malpositions.

Again I speak from a wide practical experience when I state emphatically that the vast majority of overcrowded mouths can be readily rectified by the extraction (at the proper age) of the first permanent molars or the second bicuspids (as the case may be) on each side of the jaw. The anterior teeth will then drift posteriorly and the spaces become entirely obliterated. In this highly mechanized age are we not rather inclined to miss the obvious by being so intent on achieving a specialized objective oblivious of its far-reaching consequences?—I am, etc.,

Glasgow, W.2. J. MENZIES CAMPBELL.

SIR,—Your correspondent Miss Mabel E. Carter (*Journal*, August 7, p. 361) asks what is the medical profession's opinion of the new craze for filling children's mouths with plates and plastic or metal contraptions in order to straighten teeth or alter the shape of the jaw. Might I as a member of the medical profession with a dental qualification be permitted to comment on her letter? I say "comment" advisedly, as I fear she does not seek opinion but merely desires medical support to her preformed opinion so that she can thrust it down the throats of my dental colleagues.

Orthodontics is no new craze. Dr. Angle, a great figure in this science like his early English colleague, Dr. Coffin, has long since departed from the scene. This work is undertaken, broadly speaking, for three reasons—namely, to improve appearance, to improve function, and to prevent the development of psychological ills. I regret that the former is—in parents' minds at least—paramount. I am sure no informed person can fail to place this need before verse-speaking or drama.

Having established, I hope beyond any measure of doubt, its necessity in certain cases, a word as to frequency is in order. In the past, in this country, orthodontics has been a luxury due to its cost. However, the use of stainless steel in lieu of gold, and the introduction of the National Health Service has removed to some extent the economic restriction on its universal application. However, I feel sure that

on the whole not more than 6% of children, if that, require orthodontic treatment involving the wearing of appliances. For reasons that need not be gone into here, the upper middle and upper classes have more than their fair share of such cases. Also, a slight irregularity that I would accept in a boy is often corrected in a girl. Hence if the children's boarding school referred to is of reasonable size 12 cases, whilst large, is not unreasonable.

It is worth mentioning that if the question is made to loom large in the children's eyes then a certain number of border cases will become treated cases, as parents will not want their child to appear neglected in comparison with the other children. Also, if the co-operation of parents, or those *in loco parentis*, is not forthcoming the child will apprehend this and the wearing of appliances will not be all that is desired, and hence unduly prolonged. I might add more appliances are broken in the pocket than the mouth. If the selection of cases is well made, not only as to need of treatment but as to ability to proceed with it, also as to the co-operation of adults in whose care the child is, and planning of active treatment is considered in relationship to school holidays, then the recent increase in availability and acceptance of such treatment is an excellent thing that should have the approbation and co-operation of all those interested in the health and education of children.—I am, etc.,

Guiseley, near Leeds. DENIS C. HALL.

SIR,—As a school dental surgeon with some few hundred orthodontic patients I feel I must reply through your columns to your correspondent, Miss Mabel E. Carter (*Journal*, August 7, p. 361) on the question of "the new craze for filling children's mouths with plates or metal contraptions."

May I point out that, far from being "new" or a "craze," orthodontic treatment for children has been practised for a very long time and is most essential, obviating a great deal of needless suffering in later life, such as adenoidal conditions, faulty breathing, masticatory difficulties, etc., to say nothing of the effect psychologically, particularly on a girl, of an ugly appearance. It is my experience that children who wear their appliances regularly find no discomfort in either talking or eating, nor do they develop "unpleasing habits."

Finally, might I suggest to your correspondent that the wearing of an orthodontic appliance is far less a hardship than the wearing of full upper and lower dentures.—I am, etc.,

Bath. F. LEONORA FRANKS.

An Early X-ray Picture

SIR,—The picture which you have published from Dr. S. Cochrane Shanks (*Journal*, August 21, p. 469) is made remarkable by the three statements with which he accompanied it—that is, (1) it "was taken . . . during the Easter [March] of 1896"; (2) "it is remarkable that 'show business' should so quickly adopt this new scientific discovery"; and (3) that "a schoolboy should show such a spirit of scientific curiosity"—and by the fact that such a good *x*-ray picture should have remained unpublished for 58 years.

Though Roentgen made his discovery on November 8, 1895, it was not until the end of December of that year that his discovery was publicly announced, and, though it induced very considerable activity in the leading scientists and photographers throughout the world which resulted in those early months in the publication of very many "*x*-ray pictures," this picture from Dr. Shanks appears to me to be superior in quality to any of them at that time. It certainly is very superior to those by Roentgen of "the weights in the box" and that of Mrs. Roentgen's hand, though Dr. Shanks informs us his was taken by "a schoolboy photographer of considerably less than mediocre merit."

To Dr. Otto Glasser[1] we are indebted for compiling the excellent early history of Roentgen and his work after he had made extensive investigations. From this we gather that Edison in May, 1896, was amongst the first to publicly demonstrate the fluoroscopic characters of *x* rays, but the photographic illustration of this exhibit which Glasser publishes would not appear to permit of any schoolboy activities of the type Dr. Shanks describes. It would be interesting to know just when and where the first "penny in the slot" exhibit was first introduced. Glasser gives no account of such, but I saw one such unit in the early 1920's in the Deutscher Museum, Munich, but this was less than 25 years after the discovery and when it was possible readily to produce a picture with the quality of this "early *x*-ray picture." That it was a proceeding fraught with danger can be gleaned from the fact that Edison's assistant, Mr. Dally, whose portrait appears in the photograph of Edison's exhibition, contracted *x*-ray burns from which he died.

Reproductions of radiographs can be so deceiving. How like the back of a Thretkeld-Edwards cassette with its reflection on the table is the outline of the cigarette-case. It made me wonder, could this picture have any relation to the Piltdown skull?—I am, etc.,

Birmingham. JAMES F. BRAILSFORD.

REFERENCE

[1] *Wilhelm Conrad Roentgen and the Early History of the Roentgen Rays*. 1933. John Bale, Sons and Danielsson Ltd.

Virus Chemotherapy

SIR,—Your leading article on virus chemotherapy (*Journal*, August 7, p. 348) is most interesting as showing the many pitfalls into which virus research may fall. It is also most disappointing to find so few practical results after years of research along lines which have been so brilliantly successful with the more visible and manageable bacteria. I suggest that in any disease the host must be considered as well as the parasite, and that the final test of any remedy must always be clinical experience. This being so, may I draw attention to a letter I wrote (*Journal*, January 25, 1947, p. 160) in which I suggested that, however unlikely and whatever the reason, injections of large doses of vitamins A and D ("dekadexolin") do have a most marked effect on all the virus diseases in which I have tried them?

Clinically, this letter can add little to what I said then, except to emphasize the clinical results, though I had three further interesting cases of poliomyelitis in the 1949 epidemic which made me somewhat more confident that dekadexolin might be of value. Further light on the method of multiplication of viruses makes it unlikely that the *modus operandi* I tentatively suggested in my letter is correct, though I still think that the action of the vitamins on cell walls may be connected with their remedial effect, and that it is improbable that the vitamins act directly on the viruses. However, it was not necessary to know how sulphonamides acted to see their results, and that is true of dekadexolin. In recent years it has become more recognized that, as I mentioned in my letter, vitamins in massive doses may have other actions than those on enzyme systems—for example, large doses of vitamin D in lupus, of vitamin A in ichthyosis and the milder harsh skin conditions (and what a lot of needless misery numbers of women and girls suffer because this action is not more widely known and applied), and, more recently and more speculatively, the uses of much larger doses of vitamin B_{12}. In none of these conditions has it been suggested that the patients are suffering from an avitaminosis; the vitamins given have apparently a mass action like a more ordinary drug (not that we know how a lot of them act). The same may hold with dekadexolin, which is apparently a synergic effect of the vitamins A and D.

The great virtues of dekadexolin are that it is simple and safe to give, and that any effects are rapid. The one really severe case of poliomyelitis in which I gave it was a fulminating one under the care of my assistant, and I only saw her a few minutes before the ambulance came. She was already beginning to have respiratory distress, but this passed off in four to five hours, and after that the paralysis

ceased to spread—whether *post hoc* or *propter hoc* I cannot certify. She eventually made a reasonably good recovery though her left leg is now useless and the right upper arm very weak. Not every result is quite so rapid, and most common virus diseases are notoriously variable in the way they develop; but I hardly think that it is a pure coincidence or self-deception that I should have noted improvement quickly following practically every case in which I have used it in over 20 years.

For some reason—probably connected with absorption and tissue reaction—it must be given intra-gluteally, as I mentioned in my letter, if good results are to be obtained. I expect that a colloidal suspension (such as "sterogyl-15 alcoholic") given intravenously might prove to be an even better preparation, but, as I am not sure of the safety of such a preparation, I have not used it. As a G.P. I have to work within strictly defined limits. I can only record my limited observations and hope that some time someone better qualified than I will demonstrate that the chemotherapy of at least some virus diseases is already available, and that from it yet better things will grow.—I am, etc.,

Winsford, Cheshire. W. N. LEAK.

Are Diabetic Degenerative Complications Preventable?

SIR,—To the lively tune of "Happy Wanderer" a ribald chorus of diabetic children under canvas at Walton-on-Naze confirms the opinion of Professor D. M. Dunlop (*Journal*, August 14, p. 383) and all who seek good control of diabetes mellitus:

> Portions two—urine blue,
> Portions four—urine brown,
> Buckets full—watch your step,
> You're eating far too much.

Those on the so-called free diet at home find no hardship in the daily 250–300 g. carbohydrate needed to satisfy appetite and to avoid severe insulin reactions in the unwonted physical activities of camp life. There is in this vaunted freedom no psychological benefit to parent or child. So often is it limited by fear and ignorance that children treated in this way tend to be unhappy and, indeed, underfed.—I am, etc.,

London, S.E.10. HERMON WHITTAKER.

Supply of Hydrocortisone

SIR,—I learn that hydrocortisone is now being manufactured in quantity in Great Britain, but I am more than disappointed at being informed that its use is confined to hospitals. In view of the value of this steroid applied topically in a wide variety of dermatoses, and the fact that no systemic ill effects are to be feared even from long-continued use, it is regrettable that preparations of topical hydrocortisone are not available to the G.P.

Dr. R. M. B. MacKenna states[1]: "It is, I believe, most noteworthy that in a clinical experience which now encompasses several hundred cases, there has not yet appeared a single instance of allergic sensitivity or of intolerance to the local applications of hydrocortisone. In view of this promising record for safety, and of its excellent therapeutic index in so many forms of common dermatoses, its lack of messiness, of the 'sting, stink, and stain' which so often characterize topical medicaments, I feel that hydrocortisone shows promise of becoming one of the most useful external agents ever developed for dermatologic therapy." Normally the reason put forward for depriving G.P.s of a new development is the danger attending its use. This argument cannot apply to topical hydrocortisone, and I would make a plea through your columns for G.P.s not to be limited in their prescribing of valuable new agents for arbitrary or undisclosed reasons.

Obviously there are three considerations: (1) the cost of the drug, (2) dollar leak, and (3) therapeutic efficiency. It seems highly probable that the first two take pride of place, and one imagines the Treasury weighting the scales heavily against allowing the use of any expensive drug by general practitioners. I understand that owing to the huge cost of erecting special plant it is necessary to import a small part of the content of hydrocortisone products from abroad at present. The cost of the finished product is necessarily high, but therapeutic efficiency is correspondingly high in the large range of irritable dermatoses, and the total cost would probably not be higher than that of the tons of zinc creams, antihistamine creams, etc., wasted at the present time in ineffectual treatment. Also, as to cost and dollar leak, are we to continue to pour out millions on films, tobacco, etc., at the expense of advances in therapeutics?

Finally, it seems to be forgotten that general practice offers the largest field for practical research. The G.P. learnt that penicillin used twice or three times daily was highly effective, but there was a large time lag before hospitals ceased the unnecessary practice of injecting the material two and three hourly round the clock. It is absolutely necessary to investigate the safety margin, but, when abundant evidence supports the efficiency and safety of a drug, there seems no reason why the G.P. and his patients should be deprived of valuable additions to his therapeutic armament by reasons of cost, cloaked under the guise of safety. There now seem no reasons why the local hydrocortisone products should not be released without further delay.—I am, etc.,

London, N.W.8. BARNET SOLOMONS.

REFERENCE

[1] *Modern Trends in Dermatology*, 1954. Butterworth, London.

Prevention of Poliomyelitis

SIR,—In your issue of July 10 (p. 92) you publish an excellent leading article on the prevention of poliomyelitis. According to this, an experimental quarantine scheme will be in operation this summer at Taunton Borough and Taunton Rural District, with a population of approximately 60,000. You suggest that "this is a scheme of great interest and may yield answers to many doubts."

For your information, the City of Port Elizabeth has carried out the suggested procedures since 1945. Details in regard to the measures adopted since that date were published in my Annual Report to the City Council of Port Elizabeth for the year ending June 30, 1945. The following are extracts of the report: "All cases were admitted to the Elizabeth Donkin Hospital for Infectious Diseases. The preventive measures adopted were as follows: (1) Isolation of patient for four weeks. (2) All contacts were confined to their homes for three weeks and visited by a member of the City Health Staff daily."

Since the date of publication of this report, all acute cases have been hospitalized at the Elizabeth Donkin Hospital for Infectious Diseases and all contacts have been confined to their homes for three weeks and visited regularly by members of the City Health Department staff. Recently this period has been increased to four weeks. Exceptions are made with certain adult contacts in active business who are in a position to use a private lavatory and partake of meals in their own homes. Employers of labour have been most co-operative. Patients admitted to hospital are treated as if they were suffering from a combination of typhoid fever and diphtheria, and the nursing staff is well aware of the necessity for taking adequate precautions.

In my experience, the control of contacts has two main advantages: (1) it limits the number of potential carriers in the general population, and (2) tends to prevent many persons likely to be incubating the disease from indulging in excessive exercise and exposing themselves to unnecessary fatigue during a critical period. These measures may have influenced the incidence of cases manifesting the condition in the paralytic form, as to date, in a population of 215,000, there has not been a serious outbreak of the disease. The viruses isolated from local cases by the South African Institute of Medical Research have been of the Lansing and Brunhilde types. Until a method of inducing artificial immunity has been made available to the general

public, I feel these measures should be adopted wherever possible. I shall be glad to give further details should any interested person wish me to do so.—I am, etc.,

Port Elizabeth, South Africa. DUNCAN L. FERGUSON.

Assessment of Mental Defectives

SIR,—In their interesting paper (*Journal*, August 7, p. 341) Dr. George McCoull and Mr. Leon Slupinski give figures relating to the classification of mental defectives at Prudhoe and Monkton Hospital and point out the wide discrepancy between their figures and those of O'Connor and Tizard (*Journal*, January 2, p. 16), which referred to a group of hospitals in the metropolitan area. The figures appear to show that there are relatively more low-grade patients at Prudhoe and Monkton than in the metropolitan hospitals and that the average level of its feeble-minded group is lower. As I have worked for many years in hospitals in and around London and now have charge of one in the same region as Prudhoe and Monkton the apparent discrepancy is of great interest to me, especially as I find my clinical classification of patients at Northgate and District Hospital closely resembles that described by O'Connor and Tizard. The figures are:

	Idiots %	Imbeciles %	Feeble-minded %
O'Connor and Tizard	5·9	41·7	52·3
McCoull and Slupinski	24·3	50·3	25·3
Northgate and District Hospital ..	4·6	39·7	55·7

Having had the privilege of discussing the matter with Mr. Slupinski, who is working also at my hospital, it becomes clear that the discrepancy is more apparent than real and depends on standards of classification rather than on differences between patients. The crux of the question seems to lie in the phrase "psychometric assessment." I have not worked out proportions based on a psychometric classification, but it is quite clear from inspection of I.Q.s that it would be very different. The degrees of mental deficiency overlap so much that the psychiatrist will find it possible to agree with the psychologist in the majority of cases, as at Prudhoe and Monkton Hospital, but I still think—in spite of the International Statistical Classification of Diseases and Causes of Death—that the mind as a whole remains inaccessible to measurement, that in the study of mental deficiency we are concerned with much more than measurable intelligence, and that statistical findings concerning a part of the whole can be very misleading. Perhaps it is disagreement with this point of view which leads the authors to prefer to call some patients "socially or morally defective rather than mentally defective." Is not the mind concerned with social behaviour and moral conduct? This point is elaborated in paragraph 107 of the Minutes of Evidence of the Ministry of Health and Board of Control to the Royal Commission on the Law relating to Mental Illness and Mental Deficiency.

O'Connor and Tizard found the mean I.Q. of 49 patients between the ages of 16 and 30 to be 74–75 when tested on the matrices. On the revised Stanford–Binet scale McCoull and Slupinski found the average in 84 cases to be 62.2. The average in my group of 85 cases on the same test is 53.2, but if I delete those of I.Q. less than 50 it becomes 61.7, which agrees closely with my neighbours. The difference between O'Connor and Tizard's figures and ours would appear to be due to the patients rather than the tests as far as one can judge from the 33 of my patients of I.Q. 50 or over who have been tested on both: the figures are Binet, 60.8; matrices, 61.9.

Two explanations of the relative absence of high-grade patients in our north-eastern hospitals occur to me. It may be that our overcrowding is worse than in the south and we therefore, with false optimism, tend to leave more borderline cases in the community, or perhaps the qualities of toughness and determination which are more strongly developed in the northerner enable them to manage in spite of their borderline I.Q.s.—I am, etc.,

Morpeth. C. GUY MILLMAN.

Immunity

SIR,—Sir Macfarlane Burnet's "highly theoretical approach" certainly does not detract from the interest of his stimulating lecture (*Journal*, July 24, p. 189). It is tempting to add the problem of the common cold to his "set of questions and speculations."

It is obvious that the degree of immunity to this trouble in children and adults varies from complete to almost nothing. Could it be that this variation depends on the occurrence of intrauterine infection, and the stage at which it occurs? It is tempting to postulate five groups: Group 1.—No intrauterine infection. In this group post-natal infection might result in prolonged or lifelong immunity. The same result might occur after a late intrauterine infection, with the virus a not self foreign body. Group 2.—Infection at an early stage, resulting in the death of the foetus. Group 3.—With a more mature foetus, infection might produce a symptomless carrier of the virus, as suggested for serum hepatitis. Group 4.—The virus would survive as a permanent resident, but on a basis intermediate between self and not self, so that its presence in the body would always be resented, and the resentment might show itself as chronic nasal catarrh. Group 5.—In this group the immunity response of the foetus would be more marked, but still only enough to produce a temporary immunity. This change in the cells would be permanent, leaving the patient subject throughout life to repeated colds.

All this is very speculative and over-simplified, but any new approach to such a problem as the common cold might be worth considering.—I am, etc.,

Bracknell, Berks. L. G. JACOB.

Methylpentynol in Anaesthesia

SIR,—In none of the reports of the trials of methylpentynol as premedication before anaesthesia has any side effect been mentioned. After using this drug for some time before eye operations in children, it was noted that undue restlessness was an occasional feature of the recovery period. A recent series of 110 cases illustrates this point.

Methylpentynol was given as an elixir in the recommended dosage of 250–500 mg. twenty to thirty minutes before operation. The children were aged from 2 to 16 years and all received atropine sulphate in the usual dosage in addition. Pre-operatively, most of the children were quiet and unafraid, wide awake and co-operative. Post-operatively, however, occasional considerable restlessness and excitement occurred.

Clinical state	No. of cases	Clinical state	No. of cases
Pre-operative calm ..	88(80%)	Post-operative calm ..	94(85·4%)
Pre-operatively fairly calm	15(13·6%)	Post-operative slight excitement	7(6·4%)
Pre-operative excitement	7(6·4%)	Post-operatively greatly excited	9(8·2%)

Seventeen of the children were under 5, and 93 were over 5. No significant difference in their responses were noticed as regards age groups. Anaesthetic agents were either nitrous oxide, oxygen and ether, or thiopentone, gallamine triethiodide, nitrous oxide and oxygen. Post-operative excitement occurred with both anaesthetic techniques. The restlessness was at times extreme, with bandages being torn off many times. Some of the older children became very "drunk." This period of restlessness sometimes lasted a few hours. Two of the "restless" cases who required second operations, unconnected with the restlessness, were given seconal as premedication on the second occasion, and no post-operative excitement occurred.

Post-operative restlessness in ophthalmology is, of course, of greater importance than in many other branches of surgery. The pre-operative state of the children, however, was so encouraging that I feel a further trial of this drug, using a higher dosage, is indicated to see if the post-operative restlessness can be reduced.—I am, etc.,

Glasgow. VIOLET B. YOUNG.

Obituary

R. A. VEALE, M.D., F.R.C.P.

We record with regret the death of Professor R. A. Veale, emeritus professor in the University of Leeds, at Cheltenham on August 13. He was 81 years of age.

Rawdon Augustus Veale was born on March 13, 1873, the son of a doctor and a member of a well-known Harrogate family. From Rossall, where he was head of the school, he gained a scholarship to Queen's College, Oxford, and took an honours degree in classics in 1896. His first interest was in educational work, and after several years as a schoolmaster he decided at the age of 30 to take up medicine and studied at Leeds, qualifying M.R.C.S., L.R.C.P. in 1905 and graduating M.B., B.S. (with honours in medicine) at London University in the following year. He proceeded to the M.D. in 1910, the year he was admitted M.R.C.P., and he was elected F.R.C.P. in 1924.

[*The Yorkshire Post*

In 1906 Veale was appointed house-physician at the Leeds General Infirmary to Dr. A. G. Barrs, whose common-sense teaching and matter-of-fact approach to clinical problems were perpetuated by Veale when he himself became a teacher. He became resident ophthalmic officer at the end of the same year, resident medical officer in 1909, assistant physician in 1912, and physician in charge of out-patients in 1922. For some years he was responsible for the dermatological work of the infirmary, in the days when this was part of the general physician's duties, and he was appointed lecturer in diseases of the skin in Leeds University in 1922. In 1925 he became full physician, retiring from the honorary staff in 1933, but continuing as consulting physician to within a year of his death. He held numerous other posts in the university and in the hospitals of Leeds and the West Riding. He was professor of therapeutics in the university from 1925 to 1932 and for the subsequent year occupied the chair of clinical medicine. During his infirmary career he was closely associated with Wardrop Griffith, showing his interest in cardiology, and he was at one time consulting cardiologist to the Ministry of Pensions. He was also associated in both the out-patient and in-patient duties with his colleagues George Watson and Maxwell Telling. He was honorary physician to the Leeds Public Dispensary from 1911 to 1928, and consulting physician to St. James's Hospital, Leeds, and Dewsbury and District Hospital. Closely concerned as he was with the training of nurses at the General Infirmary, he always held the highest opinion of the nursing profession. A member of the British Medical Association for 45 years, he served as a vice-president of the Section of Dermatology when the Association held its Annual Meeting at Bradford in 1924, and he was honorary secretary of the Yorkshire Branch in 1922.

During the last war, Veale returned to active practice and to work in the infirmary, the university, the public dispensary, and St. James's Hospital, deputizing for members of the staff who had been called away. On his retirement from the active staff in 1933 his teaching work was recognized by the university, who made him an emeritus professor. He continued his professional work until his retirement to Cheltenham, so that until about a year ago he was still a familiar figure about the hospital where he had taught so many students. He leaves a widow, a son who is a doctor, and a married daughter.

We are indebted to S. J. H. for the following appreciation: The death of Rawdon Augustus Veale removes from the Leeds School a respected and much-beloved figure. One can certainly say of him that he belonged to the older school of clinicians, punctual and regular in all his hospital commitments, whether clinics, teaching rounds, lectures, or committees. Although presenting a somewhat rugged and even grim exterior, he had a delightful and easily evoked smile and quickly established the easiest of relationships with all his patients other than the neurotic, for whom he had little time or patience. The human aspect of his attitude to patients was perhaps engendered by his own experience as a patient, for he had survived at least three major operations.

In his teaching he stressed the bedside approach. In the appreciation of classical symptoms and the teaching of clinical signs he made an impression on all his students, and many doctors of the Leeds School have carried his precepts into their professional practice. He was critical of technical advances and had a suspicion, if not a scorn, for unproved methods, particularly in therapeutics. He preferred signs and symptoms to laboratory investigations. He was indeed conservative in his outlook, though in medical and other politics he took no part. His character was such that he could not accept the notion of a State medical service very easily, and although this did not affect him personally he was much disquieted by anything which he regarded as a lapse from his own high ethical code.

He was a religious man in the best sense, taking an active part in the management of his own parish affairs and in the church affairs in the city generally. A keen sportsman, in his younger days he played Rugby football and cricket. Later he was an enthusiastic supporter of Yorkshire at Headingley, where he was always to be found during county matches. When he did not play he umpired in the annual cricket match between the consultant staff and the resident staff, and his comments upon fielding lapses, whether in the older or younger generation, were both tart and amusing. It was less than a year ago that his colleagues of the faculty gave a dinner in his honour on his retirement from Leeds. He was in great form on that occasion, and it is with sorrow and a real sense of loss that we heard of his passing.

EINAR KEY, M.D., Hon.F.R.C.S.

We record with regret the death in Stockholm on August 11 of Professor Einar Key, a leading figure in Swedish medicine, a surgeon of international renown, and a Foreign Corresponding Member of the British Medical Association. He was 81 years of age.

Einar Samuel Henrik Key was born on December 14, 1872, the son of Professor Axel Key, who was himself well known as a surgeon and professor of pathological anatomy at the Karolinska Mediko-kirurgiska Institutet and editor of *Nordiskt mediciniskt Arkiv*, forerunner of *Acta medica Scandinavica* and *Acta chirurgica Scandinavica*. Einar Key studied medicine first at Upsala and later in Stockholm, where he graduated at the Karolinska Institutet in 1907. After extensive surgical studies

in other European countries, including England and Scotland (where some of his ancestors came from), and after further work in Sweden he was appointed chief surgeon at the Maria Hospital, Stockholm, in 1911, and he retained this post until he retired in 1937. He was appointed to a professorship of surgery at the Karolinska Institutet in 1923. By that time he had already made a great name for himself as a surgeon, and his important original contributions in several different fields, especially in urinary and pulmonary surgery, had created great interest. He successfully removed an embolus from an artery in the leg as long ago as 1912, and the technique he devised for this operation was followed by other surgeons all over the world. He was also one of the first to apply surgical treatment to pulmonary tuberculosis, and his work paved the way for the present generation of thoracic surgeons.

From the inception of *Acta chirurgica Scandinavica* in 1919 Key was its editor, thus carrying on his father's work. His great abilities as an administrator showed themselves in the planning of new buildings for the different departments of the Karolinska Institutet, which had outgrown its ancient premises and had to move to a new site. Together with Gösta Forssell, Key shared the credit for founding the new hospital that was designed to take the place of the old Serafimerlasarett, which was founded in 1752. The building of the new hospital, the Karolinska Sjukhus, was begun in 1931 and is still being expanded. Einar Key was one of the men who have helped to give Scandinavian medicine the very high reputation it enjoys to-day. He had many friends all over the world, particularly in this country. In 1936 he was elected an honorary Fellow of the Royal College of Surgeons of England, and in 1949 a Foreign Corresponding Member of the British Medical Association. Until quite recently he was in good health, full of his usual vigour, and taking a lively interest in all medical events. He will be greatly missed.

J. J. BUTTERWORTH, M.D., D.P.H.

By the death on August 14 of Dr. J. J. Butterworth, for nearly twenty years medical officer of health for Lancashire, the public health service has lost a distinguished member. He would have been 83 next month.

John James Butterworth was born on September 19, 1871, and was a medical student at Owens College, Manchester, graduating M.B., Ch.B. from the Victoria University of Manchester in 1897. He took the D.P.H. in 1900 and proceeded to the M.D. four years later. After graduation he held resident appointments at Manchester hospitals and then went into general practice for a short time, until he was appointed assistant to the late Professor Sheridan Delépine at the Public Health Laboratory in Manchester. His next post was that of medical officer to the Salford Education Committee and lecturer on hygiene and physiology at the technological institute there. Appointed first as school medical officer to Lancashire County Council in 1908, he became the county medical officer of health in 1917, holding both appointments until he retired in 1936.

In the two decades after his appointment as county medical officer, Butterworth so organized and developed the health services of Lancashire that the county council became recognized as one of the foremost public health authorities in the country. For many years he lectured in public health law and administration at Manchester University, and in collaboration with the professorial staff did much to advance the cause of preventive medicine. A member of the British Medical Association for fifty-two years, he served as a vice-president of the Section of Public Health when the Association held its Annual Meeting at Manchester in 1929.

We are indebted to Dr. FREDERICK HALL for the following appreciation: Butterworth was a great personality, and many who have since gained high positions in the field of public health were attracted to the county staff. He laid down, by precept and example, an admirable pattern of medical administrative action, and his beneficial influence has been widespread in the land. In a peculiarly difficult administrative county he gained not only the loyalty and affection of his staff, both medical and lay, but also the friendship and co-operation of the numerous independent local authorities who esteemed his wisdom and relied on his advice. Owing to these close relationships, the transforming provisions of the Local Government Act of 1929 were put into operation with a minimum of friction and the task of those following him was made comparatively simple. Moreover, the two decades during which he held office comprised a period in which important health legislation passed before and during the first world war was being actively put into effect. It may be difficult for those accustomed only to the spacious and well-equipped clinics of these later days to appreciate the problems confronting Butterworth in the years immediately after the war. Large numbers of clinics and centres, in both urban and rural communities, had to be established and staffed, and numerous arrangements made with hospitals, general practitioners, and with other local authorities. He was thus brought into contact with a very large number of practising medical men who came to look upon him as a trusted colleague, for at all times he observed the highest standards of ethical conduct in his administration. In all these affairs clear thinking and a capacity for grasping the essentials of a problem were required, and in both these qualities Butterworth excelled. If one could particularize, perhaps the establishment of an orthopaedic scheme for the county, the purchase of Biddulph Grange as a hospital centre, and the building of a fine new orthopaedic hospital in the extensive and lovely grounds were outstanding examples of his far-sighted administrative ability. A true son of Lancashire, he loved its people and was a fine raconteur of their clean native wit. In private life he was essentially a family man, and he bore with great courage the deaths of his only son, an undergraduate at Cambridge, and later of his wife. He leaves a daughter, Dr. Marjorie Cundiff, with whom he lived during his later years and at whose residence he died.

W. ST. C. McCLURE, M.R.C.S., D.P.H.

Dr. W. St. C. McClure, formerly deputy medical officer of health for Manchester, died on August 13, aged 73. Walter St. Clair McClure was born at Worle, Somerset, the son of Mr. Thomas McClure, F.R.C.S.I., and was educated at Epsom College and at University College, London, receiving his clinical training at the London Hospital. He qualified M.R.C.S., L.R.C.P. in 1906 and took the D.P.H. of the English Royal Colleges three years later. He held house appointments at the Chesterfield and North Derbyshire Hospital and then went to Devonport as school medical officer in 1908, becoming assistant medical officer of health in 1911. Soon afterwards he moved north to take up the appointment of medical officer of health for Withington, one of the towns later incorporated in the City of Manchester. He was appointed deputy medical officer of health for Manchester in 1915 and held the post until he retired in 1946 on reaching the age limit.

Dr. McClure's long service on the medical staff of the Manchester health department provided a vital thread of continuity linking the service as it is to-day with the pioneer work of Dr. James Niven, who was medical officer of health for the city from 1894 to 1922. In

Niven's "Observations on the History of Public Health Effort in Manchester" there are many references to and appreciation of the work of Dr. McClure, particularly in relation to infectious diseases. Until his retirement Dr. McClure was in charge of the infectious diseases section of the department. His clinical and epidemiological opinions were accepted as authoritative and were highly valued by general practitioners and his public health colleagues. He was until recently a member of the Ministry of Health panel of advisers on smallpox to medical officers of health. When the British Medical Association held its Annual Meeting at Manchester in 1929, he acted as one of the secretaries of the Section of Public Health.

We are indebted to Dr. C. METCALFE BROWN for the following appreciation: Dr. W. St. C. McClure was a cultured man and an able administrator. He took a great interest in the welfare of the staff, in particular of the junior members, with whom he was highly popular. He was a keen soccer player in his youth, and even after he had reached the age of well over 40 he played occasionally for the health department's football club. He was a bachelor who easily gained the confidence and affection of young children, whom he loved to entertain, to their delight and wonder. He had a dry and pleasant wit, and his private conversation and more formal addresses abounded in humanity and good humour. Of showmanship and humbug he was brusquely intolerant, which was consistent with his high standard of integrity and forthrightness. The community failed to give Dr. McClure the full recognition which his gifts and devoted service deserved, but he was held in high esteem and affection by those who had the opportunity of knowing him well and who have missed his presence in the department and mourn him now. I gratefully recall the loyal and generous guidance and support given by an elderly experienced deputy during the first four years of my service as medical officer of health in the city. He was invariably friendly and kind. And so has passed on another of the admirable characters of the older generation in the public health service—a great and good man.

H. K. CORKILL, O.B.E., M.B., F.R.C.S.Ed. F.R.A.C.S.

We are indebted to Professor Lambert Rogers for the following appreciation:

Many will have been grieved to read (*Journal*, August 21, p. 473) of the death of Surgeon Captain H. K. Corkill. Corky, as he was known to many friends in the profession and in the service, was a charming host to many of us who had occasion to spend a night or two in H.M.S. *Philomel* when passing through Auckland during the war. He was over here in 1943, and the Medical Director-General asked me to show him the various naval hospitals in the country in the course of a number of visits which I was then making. He proved to be not just a visitor but a charming companion and a helpful one, and assisted cheerfully and kindly wherever he went with whatever needed to be done. I will remember how he sat in the rising tail of an aircraft at the head of a patient with head wounds when we were flying to one of the hospitals, and how helpful he was in dealing with the patient when we got there. He was not only a wise and helpful colleague but a charming and kindly one, a skilled and popular administrator, and an excellent shipmate whom his old naval friends, among so many others, will sadly miss. And now that he has made the shining harbour we may safely say of him: "He shall fear no doubting challenge streaming out against the sky"; for his name shines brightly wherever he was known and wherever he went.

Dr. LAWRENCE HENRY CARR BIRKBECK died at the home of his eldest daughter at Whitby, Yorkshire, on July 30, his 81st birthday. Born in 1873, the son of the late Isaac Badcock, Q.C., he changed his name to Birkbeck in 1900, when he inherited his mother's family property at Settle in the West Riding of Yorkshire. After attending Lloyd's Preparatory School at Hartley Row, Hampshire, he won a scholarship to Winchester College and later entered Trinity College, Oxford, as a medical student. Receiving his clinical training at St. Thomas's Hospital, he graduated B.M., B.Ch. in 1900. After holding a number of house appointments at St. Thomas's he settled in general practice at Taunton in 1902. For about 30 years he was honorary surgeon to the Taunton and Somerset Hospital and medical officer to Taunton School. His professional services were frequently required, also, by both King's and Queen's Colleges, Taunton, and his numerous appointments in Somerset included those of honorary surgeon to the cottage hospitals at Wellington and Chard. He gave up general practice in 1930 to become resident bursar and medical officer at Trinity College, Glenalmond, Perthshire, later retiring to Stackhouse, near Settle. During the first world war he served with the R.A.M.C. and for the greater part of the time was surgical specialist at various casualty clearing stations in France. During the last war he acted first as air-raid-precautions organizer and first-aid instructor in the Ewecross area and later undertook medical work as a locumtenent at Cambridge and elsewhere. After his retirement he served as a governor of both Sedbergh and Giggleswick Schools and as a West Riding magistrate for the petty sessional division of Staincliffe West, and he was an active supporter of many social organizations in the Craven district. His wife, formerly Miss Frances J. Steel, whom he married in 1902, pre-deceased him by two months.

Dr. J. T. SHIRLAW died at his home at Upholland, near Wigan, on July 26 after a brief illness. He was in his 80th year, and was probably the oldest practising doctor in the district. John Thomson Shirlaw was born in Scotland on March 23, 1875, and graduated M.B., C.M. at Edinburgh in 1896, proceeding to the M.D., with commendation, in 1908. After practising as an assistant for brief periods at South Shields and Rochester, he joined the late Dr. J. L. Johnstone, of Orrell, and subsequently commenced practice in Upholland, where he remained for over half a century. For many years Dr. Shirlaw conducted his large practice single-handed, with primitive means of transport and few hospital facilities. Fractures, abnormal midwifery, and even major surgery had all to be treated on a domiciliary basis, and there are many persons still living in the district who can testify to his skill under the most difficult conditions. Even with advancing years he never allowed himself to lag behind in medical knowledge, and there were few important advances which escaped his notice. Apart from his work, Dr. Shirlaw was a man of wide interests and culture, and he was always tolerant of another's point of view no matter what his own might be. He was interested in all forms of sport, but particularly in the game of golf, which he played himself until quite recently. Dr. Shirlaw was fortunate in possessing a fine physique and robust health, and, although his life had not been free from sorrow, he maintained his optimism, courtesy, and cheerful disposition to the end. His wife, formerly Miss Elizabeth Johnstone, died in 1952, and of the five children of the marriage two sons and a daughter survive, to whom our sympathy is extended. The large and representative congregation which assembled at Upholland parish church on the occasion of his funeral bore eloquent witness to the great affection and respect in which he was held by all sections of the community.—H. D.

Mr. J. W. LLOYD, for many years well known as an oral and dental specialist in Liverpool, died there on August 17, some two weeks after his 89th birthday. Born at Liverpool on August 4, 1865, John Wesley Lloyd was educated at the Leys School, Cambridge, and at University College, Liverpool, continuing his studies in Paris. He qualified by taking

the M.R.C.S., L.R.C.P. in 1889 and then held the appointments of house-surgeon and clinical assistant at Liverpool Royal Infirmary. Having decided upon dental surgery as a career, he took the L.D.S. of the Royal College of Surgeons of Edinburgh in 1890. He then settled in practice at Liverpool, and in 1898 was appointed honorary surgeon to the Liverpool Dental Hospital, a position he held for twenty-five years. At the beginning of the century he became honorary dental surgeon to the Children's Convalescent Home at West Kirby, Cheshire, where he then made his home. He was always keenly interested in the dental welfare of children and was appointed honorary dental surgeon to the Liverpool County Hospital for Children, Heswall, in 1910. His reputation as a dental specialist already stood high, and Liverpool University had enlisted his services in 1906 as a member of its Board of Dental Studies, of which he later became chairman. For a number of years he was also an examiner on behalf of the university. A member of the Liverpool Medical Institution from the time he first qualified, he later became a member of the Liverpool and District Odontological Society, of which he was president in 1913, and of the British Dental Association, and he was a delegate to the International Dental Congress held in London in 1914. A keen member of the Territorial Army, he held the rank of surgeon-major and served for many years at the Lancashire Fortress of the Mersey Coast defences manned by the Royal Engineers. He retired from the Territorial Army just before the outbreak of the last war, after some thirty years' service, for which he was awarded the Territorial Decoration. Retiring from practice in the mid-'thirties, he left West Kirby to go to live at Hoylake. He was a keen golfer and had played only a fortnight before his death. He is survived by his widow, two daughters, and one son, who is the Rt. Hon. Selwyn Lloyd, Minister of State at the Foreign Office.

Universities and Colleges

UNIVERSITY OF OXFORD

In Congregation on July 17 the following degrees were conferred:

D.M.—M. de G. Gribble, I. M. Shepherd.

B.M.—P. L. C. Monier-Williams, D. G. Craig, P. F. Mead, I. W. Young, P. R. Lane, M. W. P. Nienaber, W. P. E. Exelby, D. H. Neale, A. J. McM. Cavenagh, J. H. Davies, K. Norcross, W. F. C. Blumer, G. A. W. Sharrard, J. P. A. Weaver, L. D. Brookes, J. S. R. Harcombe, J. P. H. M. Rae, R. R. Tilleard-Cole, F. D. C. Ford, L. J. Atkinson, Mrs. Chrystal H. Ashton, Jacqueline B. Lyon, *A. E. Cameron, *L. P. H. ffrench-Constant, *M. Li. Sommer.

In Congregation on July 31 the following degrees were conferred:

B.M.—T. D. Seigne, P. H. Wiesendanger, *A. M. Smith.

*In absence.

UNIVERSITY OF CAMBRIDGE

In Congregation on July 31 the following degrees were conferred:

M.D.—G. H. Wright, R. C. Roxburgh, P. A. G. Monro, M. B. Matthews, J. L. S. Smith, J. C. Burne.

M.B.—*E. P. Lawrence, *D. H. Mathias, P. B. C. Matthews, *B. H. S. Dixon, *R. A. Owen, *J. D. S. Vernon, J. Bamforth, G. G. Carmichael, *E. E. Denman, *P. MacN. Dunn, G. F. Mayall, A. Robinson, B. H. B. Robinson, A. S. Valentine, *J. A. Stamford, D. K. Fairweather, R. S. McKim, M. A. Newland, R. M. Stirland, W. V. Agnew, *D. H. Jones, *K. R. Oliver, *R. S. Wardle, J. T. Fitzsimons, J. A. S. Lees, E. S. J. Samuel, J. C. S. Turner, *S. A. Tillyard, P. C. Anderson, R. O. Selby, *F. E. Kenyon, *R. W. Payne, K. L. G. Mills, W. D. W. Williams, *J. C. L. Rawes, *J. C. Willan, J. A. Butler, J. N. Harcourt-Webster, *L. F. Brunt, J. P. English, C. A. M. Walkley, *Mrs. Anne Clarke, *Mrs. Elizabeth J. P. Davies, *Sylvia E. Reed, *Elizabeth I. Tanner, June P. Brady, Mary E. Budleigh, Irene E. McLaren, *Diana Ratcliffe.

M.B., B.CHIR.—*D. L. Almond, *C. P. Hindley, *D. A. Mitchison, W. D. Dolton, A. Bracewell, *Mrs. Anne B. Bentinck Speed, *J. D. Chard, *J. Hurst, W. G. R. M. Laurie, N. W. Fogg.

Dr. J. McE. Potter has been elected to the E. G. Fearnsides Scholarship for 1954.

*By proxy.

UNIVERSITY OF LONDON

The following candidates have been approved at the examination indicated:

M.D.—*Part I*: J. H. Allison, A. P. Barter, S. Benaim, E. H. Cooper, A. J. P. Crowden, J. H. Davies, A. M. Dawson, G. A. Dransfield, J. Fry, R. Goulding, A. Guz, Rosemary Hart, C. E. D. Hearn, K. M. S. Hume, Margaret O. Jago, H. Keen, H. A. Kelsey, C. I. Levene, J. Q. Matthias, D. Mendel, J. W. Mold, B. Li. C. Phillips, A. J. Popert, W. H. R. Rees, Olive M. Riddle, A. P. Roberts, D. G. Rushton, Barbara J. Salisbury, Margaret Sheldon, H. C. Smellie, C. H. Wood.

Vital Statistics

Marriages in 1952

The Registrar-General's civil statistics[1] for 1952 show that there were 349,308 marriages, giving a rate of 15.8 persons marrying per thousand population. The average age of men marrying was 29 and of women 26; the most popular age of marriage for men was 23 and for women 21. 50% of marriages were in the Church of England and the Church in Wales, 9% in Roman Catholic churches, and 31% in register offices. The numbers marrying in the Church of England and the Church in Wales have decreased from 91% in 1844; those marrying in Roman Catholic churches and in register offices have increased from 1.7% and 2.6% respectively. The most popular month for marriage was March, partly because of the income-tax relief obtainable, and the least popular was January. Divorce decrees numbered 33,922. The two most frequent causes were desertion (15,870 cases) and adultery (13,010 cases). In 10,995 cases there were no children of the marriage and in 296 cases there were seven or more. Confinements resulting in multiple births numbered 8,590, of which 64 were of triplets and 1 of quadruplets. Examination of the 1952 death records for married women showed that 17.7% died without having borne a child.

Week Ending August 14

The notifications of infectious diseases in England and Wales during the week included: scarlet fever 431, whooping-cough 2,090, diphtheria 7, measles 2,840, acute pneumonia 279, acute poliomyelitis 97, dysentery 384, paratyphoid fever 15, and typhoid fever 4.

Infectious Diseases

Infectious diseases were less prevalent in England and Wales during the week ending August 7. The largest falls in the number of notifications were 495 for measles, from 3,387 to 2,892, 290 for whooping-cough, from 2,000 to 1,710, 180 for scarlet fever, from 712 to 532, and 121 for dysentery, from 445 to 324.

The largest falls in the number of notifications of measles were 151 in Lancashire, from 759 to 608, and 107 in Cheshire, from 438 to 331, and the only large exception to the general trend was a rise of 62 in Yorkshire West Riding, from 162 to 224. The largest decrease in the notifications of whooping-cough was 64 in Lancashire, from 230 to 166. No large variation was reported in the local trends of scarlet fever. 18 cases of diphtheria were notified, 4 more than in the preceding week. The largest returns were Lancashire 6 (Liverpool C.B. 3), Devonshire 3 (Plymouth C.B. 3), London 3.

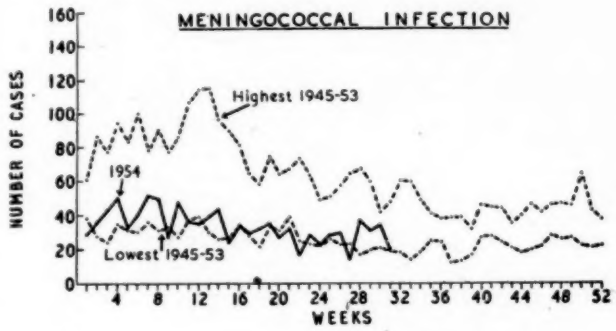
82 cases of acute poliomyelitis were notified. These were 1 fewer for paralytic and 11 fewer for non-paralytic cases than in the preceding week. The largest returns were Lancashire 11 (Liverpool C.B. 9), Yorkshire West Riding 7 (Leeds C.B. 2), London 7 (Deptford 2), Durham 6 (Stockton-on-Tees M.B. 2), Kent 5.

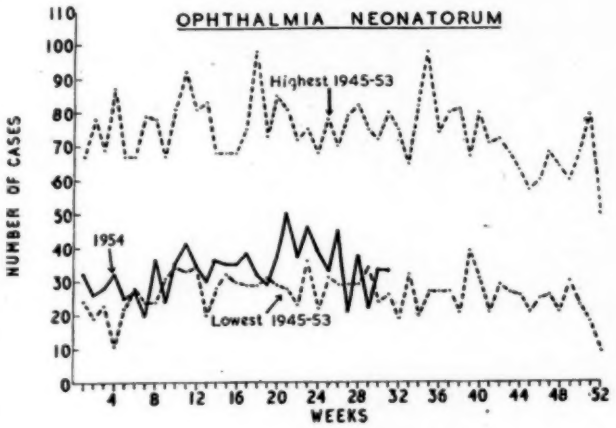
A decrease occurred in the number of notifications of dysentery for the fourth consecutive week. The largest centres of infection during the week were Lancashire 52 (Salford C.B. 12); London 42 (Islington 9); Kent 38 (Penge U.D. 31); Yorkshire West Riding 27; Gloucestershire 25 (Bristol C.B. 23); Middlesex 19.

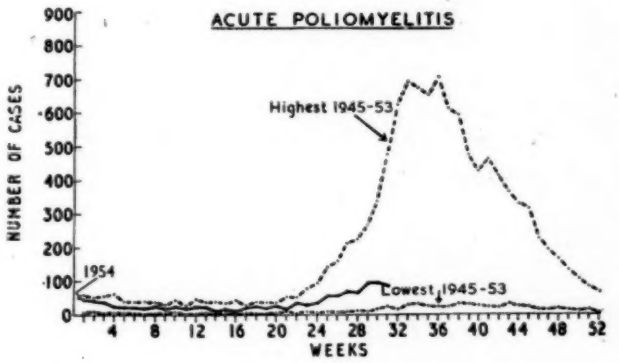
[1] *Registrar-General's Statistical Review*, 1952, Tables, Part II, Civil. H.M.S.O., 6s.

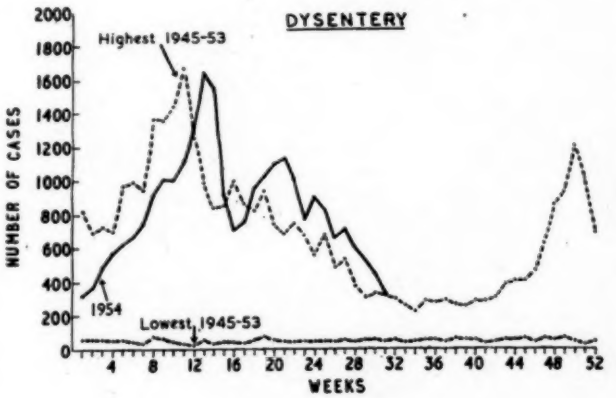
Graphs of Infectious Diseases

The graphs below show the uncorrected numbers of cases of certain diseases notified weekly in England and Wales. Highest and lowest figures reported in each week during the nine years 1945–53 are shown thus - - - - - -, the figures for 1954 thus ————. Except for the curves showing notifications in 1954, the graphs were prepared at the Department of Medical Statistics and Epidemiology, London School of Hygiene and Tropical Medicine.









INFECTIOUS DISEASES AND VITAL STATISTICS

Summary for British Isles for week ending **August 7** (No. 31) and corresponding week 1953.

Figures of *cases* are for the countries shown and London administrative county. Figures of *deaths* and *births* are for the 160 great towns in England and Wales (London included), London administrative county, the 17 principal towns in Scotland, the 10 principal towns in Northern Ireland, and the 14 principal towns in Eire.

A blank space denotes disease not notifiable or no return available.

The table is based on information supplied by the Registrars-General of England and Wales, Scotland, N. Ireland, and Eire, the Ministry of Health and Local Government of N. Ireland, and the Department of Health of Eire.

CASES in Countries and London	1954 Eng. & Wales	1954 Lond.	1954 Scot.	1954 N. Ire.	1954 Eire	1953 Eng. & Wales	1953 Lond.	1953 Scot.	1953 N. Ire.	1953 Eire
Diphtheria	18	3	5	0	0	18	3	2	0	1
Dysentery	324	42	134	3	1	380	45	67	5	1
Encephalitis, acute	2	1	0	0	0	9	2	0	0	
Enteric fever:										
Typhoid	3	0	2	0	1	4	1	3	0	
Paratyphoid	4	0	1	0	5(B)	5	1	0	0	1(B)
Food-poisoning	207	19		0		647	113		2	
Infective enteritis or diarrhoea under 2 years				11					10	37
Measles*	2,892	126	30	71	92	4,795	107	117	166	141
Meningococcal infection	20	2	12	2	1	24	1	17	1	1
Ophthalmia neonatorum	33	3	7	0	0	31	5	2	0	
Pneumonia†	234	14	91	6	0	286	5	98	3	
Poliomyelitis, acute:										
Paralytic	52	4	14	2	1	147	17	3	25	6
Non-paralytic	30	3				76	10			
Puerperal fever§	229	49	9	1		192	22	3	0	1
Scarlet fever	532	34	70	15	26	1,081	64	118	23	41
Tuberculosis:										
Respiratory	540	61	106	31				133	30	
Non-respiratory	74	12	23	6				23	6	
Whooping-cough	1,710	76	131	11	29	4,218	384	350	58	105

DEATHS in Great Towns	1954 Eng. & Wales	1954 Lond.	1954 Scot.	1954 N. Ire.	1954 Eire	1953 Eng. & Wales	1953 Lond.	1953 Scot.	1953 N. Ire.	1953 Eire
Diphtheria	0	0	0	0	0	0	0	0	0	0
Dysentery	0	0		0		0	0		0	
Encephalitis, acute		0			0		0			0
Enteric fever	1	0	0	0	0	0	0	0	0	
Infective enteritis or diarrhoea under 2 years	2	0	0	0	1	13	1	1	1	0
Influenza	4	2	1		0	4	2	0	0	0
Measles		0	0	0	0		0	0	0	0
Meningococcal infection		0	1	0			0	0		
Pneumonia	141	13	19	11	0	103	15	13	7	2
Poliomyelitis, acute	3	0			0	7	1			0
Scarlet fever		0	0	0	0		0	0	0	0
Tuberculosis:										
Respiratory	58	8	11	0	4	86	10	16	1	2
Non-respiratory		0	13	0	0		0	1	0	2
Whooping-cough	0	0	0	0	0	2	0	1	1	0
Deaths 0–1 year	196	23	41	1	7	213	17	18	7	4
Deaths (excluding stillbirths)	4,416	614	548	97	116	4,040	533	504	92	116
LIVE BIRTHS	7,099	1112	891	220	401	7,751	1166	852	196	387
STILLBIRTHS	181	13	31			177	15	25		

* Measles not notifiable in Scotland, whence returns are approximate.
† Includes primary and influenzal pneumonia.
§ Includes puerperal pyrexia.

Medical News

The Proceedings of the First World Conference on Medical Education will be published in October by the Oxford University Press (royal octavo, 820 pp., £3 net). The opening chapters are by Sir LIONEL WHITBY, Sir RICHARD LIVINGSTONE, Professor JOHN F. FULTON, and Colonel S. M. K. MALLICK. Then follow chapters in the four following sections: (i) Requirements for Entry into Medical Schools; (ii) Aims and Content of the Medical Curriculum; (iii) Techniques and Methods of Medical Education; and (iv) Preventive and Social Medicine. The book concludes with reports on the work of the conference by Professor VICTOR JOHNSON and Dr. RAYMOND WHITEHEAD; Sir A. L. MUDALIAR and Dr. A. MORGAN JONES; Professor A. HURTADO and Professor IAN AIRD; Professor A. STAMPAR and Dr. CHARLES FLETCHER.

Lead in Food.—The Ministry of Food has published a report, approved by its Food Standards Committee, recommending revised limits for the amount of lead permissible in food and drinks (H.M.S.O., price 6d.). The report recommends that the new limits should be made statutory and periodically revised. For "beverages ready to drink" an upper limit of 0.2 parts per million is proposed; for refined sugar, edible oils, and fats 0.5 p.p.m.; and for other foods 2 p.p.m. The principal source of lead contamination is from lead or lead compounds in food-processing plant, pipes, and agricultural insecticides. Under current trade practices certain foodstuffs cannot be brought immediately within the proposed limits. These are scheduled in the report and higher limits allowed. Most of them are foods liable to contamination from the container, such as beer and cider, ice-cream and iced lollies, and canned meat and fish. The report gives special attention to the risk of contamination of alcoholic beverages. Lead pipes are still used in some breweries, bottling plants, and licensed houses, and this practice is condemned.

Travelling Awards.—The Medical Research Council announces the following travelling awards for the academic year 1954–5:

Rockefeller Travelling Fellowships in Medicine.—Dr. J. M. N. BOSS, histologist, Middlesex Hospital Medical School, London; Dr. J. E. LOVELOCK, National Institute for Medical Research, London; Dr. J. PEMBERTON, senior lecturer in social and industrial medicine, University of Sheffield; Dr. T. R. E. PILKINGTON, medical first assistant, St. George's Hospital, London; Dr. O. L. WADE, lecturer in medicine, University of Birmingham; and Dr. K. W. W. H. WALTON, lecturer in experimental pathology, University of Birmingham.

Eli Lilly Travelling Fellowships in Medicine.—Dr. A. GOLDBERG, Nuffield Research Fellow, University College Hospital Medical School, London; Dr. R. H. HEPTINSTALL, senior lecturer in morbid anatomy, St. Mary's Hospital, London; Dr. K. MCCARTHY, lecturer in bacteriology, Liverpool University; and Dr. G. T. MILLS, senior lecturer in biochemistry, University of Glasgow.

Dorothy Temple Cross Research Fellowship in Tuberculosis.—Dr. J. C. BATTEN, medical first assistant and registrar, St. George's Hospital, London.

Alexander Pigott Wernher Memorial Travelling Fellowship in Otology.—Dr. W. BURNS, professor of physiology, Charing Cross Hospital Medical School, London. (Travelling expenses.)

French Exchange Scholarships in Medical Science (in association with the Centre National de la Recherche Scientifique).—Mr. A. N. DAVISON, Medical Research Council Toxicology Research Unit, Carshalton, Surrey; and Mr. M. F. PIERCY, lecturer in experimental psychology, Birmingham University.

Chair of Chemical Pathology at St. Mary's.—Dr. A. NEUBERGER, head of the biochemistry division of the National Institute for Medical Research, has been appointed to the London University Chair of Chemical Pathology tenable at St. Mary's Hospital Medical School.

Clinical Chemistry.—Next January the American Association of Clinical Chemists will launch a new journal, *Clinical Chemistry*. It will contain original articles on all aspects of the subject and a section of abstracts. *Clinical Chemistry* will be published bimonthly by Paul B. Hoeber, Inc., 49, East 33rd Street, New York, 16, at an annual subscription of $9.

Occupational Therapy Congress.—The World Federation of Occupational Therapists held their first international congress last week at George Heriot's School, Edinburgh, under the chairmanship of Professor NORMAN DOTT, president of the Scottish Association of Occupational Therapists. Opening the congress on August 16, Commander T. D. GALBRAITH, Under-Secretary of State for Scotland, said there were now 1,400 occupational therapists in hospitals in Britain compared with 1,000 four years ago. However, the number fell far short of the 3,000 the Cope Committee thought necessary for a completely satisfactory service, and the big problem was shortage of staff. He asked the congress to give special thought to the question of eliminating any inessentials from the occupational therapist's training programme. The congress then got down to a series of lectures, discussions, visits to hospitals, and social entertainments. It ended on August 21.

Nurse Tutors.—Recommendations on the function, status, and training of nurse tutors are contained in a report issued jointly this week by the Ministry of Health, the Department of Health for Scotland, and the General Nursing Councils for England and Wales and Scotland. The report is the work of a committee appointed three years ago under the chairmanship of Dr. JANET AITKEN, and is published by Her Majesty's Stationery Office, price 1s. net.

Drummond Fellowship.—The first Drummond Fellowship in nutrition—the memorial to the late Sir Jack Drummond—has been awarded to Dr. IAIN MACINTYRE at the Postgraduate Medical School of London. Details of the Fellowships were given in our issue of May 15 (p. 1164).

COMING EVENTS

British Association.—Dr. E. D. ADRIAN'S presidential address on "Science and Human Nature" will be broadcast in the Home Services at 9.15 p.m. on Wednesday, September 1. The speeches of welcome will be televised at 9 p.m.

Chartered Society of Physiotherapy.—Annual congress at Harrogate, September 9–12. Details from the Honorary Congress Secretary, the Private Clinic, 38, Park Square, Leeds, 1.

International Society for the Welfare of Cripples.—Sixth world congress at The Hague, September 13–17. Details from Central Council for the Care of Cripples, 34, Eccleston Square, London, S.W.1.

Rehabilitation of the Disabled Worker in Industry.—Three-day course at Glasgow for industrial medical officers and others, September 13–15. Details from British Council for Rehabilitation, Tavistock House (South), Tavistock Square, London, W.C.1.

Society of Medical Officers of Health.—An ordinary meeting of the Society will be held at the London School of Hygiene and Tropical Medicine on September 16 at 5.30 p.m., when Dr. JEAN MACKINTOSH will be installed as president for the coming session. The subject of her presidential address will be "The Way Ahead."

Guy's Hospital Dinner.—The Guy's Hospital Biennial Dinner will be held at the Connaught Rooms, Great Queen Street, W.C.1, on Friday, October 1, at 7 for 7.30 p.m. Tickets, 25s. each, may be obtained from the honorary secretary, Mr. O. GAYER MORGAN, M.Ch., Medical School, Guy's Hospital, S.E.1.

NEW ISSUES

British Journal of Ophthalmology.—The new issue (Vol. 38, No. 9) will be available in a week's time. The contents include:

VASCULAR ANATOMY OF THE CHOROID IN RELATION TO SELECTIVE LOCALIZATION OF OCULAR DISEASE. K. Wybar.
ELECTROMYOGRAPHIC STUDY OF CONDITIONS INVOLVING LIMITED MOBILITY OF THE EYE, CHIEFLY DUE TO NEUROGENIC PARESES. A. Björk.
DEGENERATIONS OF THE DOG RETINA. V. GENERALIZED PROGRESSIVE ATROPHY OF UNCERTAIN AETIOLOGY. H. Parry.
RADIOACTIVE PHOSPHORUS AS AN AID TO THE DIAGNOSIS OF MALIGNANT MELANOMA OF THE EYE. M. Snodgrass, J. M. A. Lenihan, and D. A. Primrose.
STRENGTH OF THE ORBICULARIS OCULI. H. Jacobs.
RECOVERY OF SIGHT AFTER RUPTURE OF THE GLOBE. C. Heath.
PRIMARY TUBERCULOSIS OF THE CONJUNCTIVA TREATED WITH STREPTOMYCIN AND PARA-AMINO-SALICYLIC ACID. S. Eadie.
CHOROIDAL DETACHMENT FOLLOWING OPERATION FOR DETACHED RETINA. J. Gibson Moore.

Issued monthly; annual subscription £4 4s.; single copy 8s. 6d.; obtainable from the Publishing Manager, B.M.A. House, Tavistock Square, London, W.C.1.

Journal of Clinical Pathology.—The new issue (Vol. 7, No. 3) will be available in a week's time. The contents include:

A REVIEW OF THE VARIETIES OF HUMAN HAEMOGLOBIN IN HEALTH AND DISEASE. J. C. White and G. H. Beaven.
A FAMILY ILLUSTRATING THE DOUBLE INHERITANCE OF THE SICKLE CELL TRAIT AND OF MEDITERRANEAN ANAEMIA. J. G. Humble, Ian Anderson, J. C. White, and Tristram Freeman.
ALKALI-RESISTANT HAEMOGLOBIN IN NORMAL GREEK CHILDREN. C. Choremis, L. Zannos, and C. Dendaki.
MYELOSIS INVOLVING THE GRANULOCYTIC AND ERYTHROCYTIC SYSTEMS. George Discombe and Kenneth Nickol.
NON-REACTIVE TUBERCULOSIS. J. R. O'Brien.
BACTERIOLOGICAL DIAGNOSIS OF TUBERCULOUS ENDOMETRITIS. R. L. Vollum.
OXYURIS GRANULOMA OF THE ENDOMETRIUM. R. C. Nairn and Helen L. D. Duguid.
MALIGNANT GIANT-CELL SYNOVIOMA OF PHALANX. C. H. G. Price and J. C. Valentine.
WIDESPREAD SEROUS MEMBRANE INVOLVEMENT BY RHEUMATOID NODULES. Philip Ellman, Leon Cudkowicz, and J. Stanley Elwood.
THE DETERMINATION OF SERUM ACID AND ALKALINE PHOSPHATASE ACTIVITY WITH 4-AMINOANTIPYRINE (A.A.P.). M. E. A. Powell and M. J. H. Smith.
THE MODE OF ACTION OF PHENYLINDANEDIONE. W. Walker and R. B. Hunter.
STUDIES OF THE EXCRETION OF POLYVINYLPYRROLIDONE BY THE NORMAL HUMAN KIDNEY. H. Campbell, P. O. Kane, D. F. Muggleton, and Ingrid G. Ottewill.
THE DETERMINATION OF INULIN BY LITTLE'S METHOD. F. W. Diggins and P. H. Sanderson.
A FAST GREEN METHOD FOR STAINING RED CELLS. G. P. Xuereb and R. Beesley.

Issued quarterly; annual subscription £2 2s.; single copy 12s. 6d.; obtainable from the Publishing Manager, B.M.A. House, Tavistock Square, London, W.C.1.

APPOINTMENTS

MACK, WILLIAM SOMMERVILLE, M.B., Ch.B., F.R.C.S.Ed., F.R.F.P.S., Consultant Urologist in charge of wards, Western Infirmary, Glasgow.

NORTH-EAST METROPOLITAN REGIONAL HOSPITAL BOARD.—J. W. Fawcett, M.D., M.R.C.P., Part-time Consultant Physician, King George Hospital, Ilford; K. L. Buxton, M.B., F.R.C.S., D.T.M.&H., Consultant Physician and Medical Superintendent, Mildmay Mission Hospital.

BIRTHS, MARRIAGES, AND DEATHS

BIRTHS

Davis.—On August 18, 1954, to Beulah (formerly Taylor), wife of Dr. Neville Davis, a son—Fabian Alexander.
Lauckner.—On July 31, 1954, to Dr. Helena (formerly Taylor), wife of Dr. J. R. Lauckner, University College, Ibadan, Nigeria, a daughter—Sheena Mary.
Matthews.—On August 21, 1954, at Cardiff, to Joyce (formerly Wallis), wife of Dr. Bryan Matthews, a third son.
Pearson.—On August 16, 1954, at St. John's Hospital, Chelmsford, Essex, to Francine (formerly Passeron), a sister for Robert and Peter—Lucrece.
Wilkie.—On July 30, 1954, at the Jessop Hospital, Sheffield, to Noreen (formerly Keer), wife of D. J. K. Wilkie, M.R.C.S., D.O.M.S., a son—Ian James.
Wilkinson.—On July 13, 1954, at Mary Stevens Maternity Home, Stourbridge, to June (formerly Tolley), wife of Dr. Ian Wilkinson, a daughter—Sara Anne.

MARRIAGES

Williams—Stockley.—On August 21, 1954, at Croham Road Baptist Church, South Croydon, by Reverend W. H. Batstone, Grenville John Castle, son of Mr. and Mrs. John E. Williams, to Dorothy Jean, daughter of Dr. and Mrs. Handley G. Stockley.

DEATHS

O'Farrell.—On August 5, 1954, at Guy's Hospital, London, S.E., William Michael O'Farrell, M.B., B.Ch., of Putney, London, S.W.
Platt.—On August 7, 1954, Phyllis Mary Platt, M.B., Ch.B., D.O., of Stanningley Road, Leeds, Yorks, aged 55.
Stevens.—On August 3, 1954, Henry Stevens, M.R.C.S., L.R.C.P., of Hatches, Eldon Road, Eastbourne, Sussex, formerly of Dover, Kent.

Any Questions?

Correspondents should give their names and addresses (not for publication) and include all relevant details in their questions, which should be typed. We publish here a selection of those questions and answers which seem to be of general interest.

Yoghourt

Q.—*What is yoghourt, and how is it made? What is its nutritional value compared with milk? Can it carry milk-borne diseases, such as tuberculosis, or is it sterilized during manufacture? Are there any medical conditions in which it is specially indicated? Wide claims have been made for its health-giving properties.*

A.—Yoghourt is a form of soured milk made by boiling milk, cooling to 37–40° C., and inoculating with a culture of *Lactobacillus bulgaricus* or *L. acidophilus*, or with a small amount of previously prepared yoghourt. The inoculated milk is kept at 37–40° C. until the next day. Sometimes the milk is evaporated to half its bulk before adding the culture.

Yoghourt is a semi-solid creamy substance containing 2–3% lactic acid. Its nutritional value is practically the same as that of milk, although some of the vitamins will be destroyed in its preparation. Tubercle and other bacilli, if present in the milk, will be destroyed in the preparation of yoghourt, which still remains a good culture medium and can be infected with certain organisms—e.g., from dirty hands or droplet infection. In spite of former enthusiasm, dating from the days of Metchnikoff at the beginning of the century, yoghourt is of no more value medically than milk, and it has no special health-giving properties that the latter has not got.

Recurrent Oedema of the Tongue

Q.—*What is the aetiology and treatment of repeated swelling of the tongue, duration three to nine hours, sometimes involving only one-half and sometimes involving the whole tongue, in a woman of 85? This swelling, which has now occurred seven times in the last two years, is always nocturnal. The patient wears dentures and uses a fixative solution. The swelling is not prevented by one tablet of promethazine at night, and does not seem to be influenced by the administration of adrenaline, subcutaneously or intramuscularly, or diphenhydramine intravenously, but eventually appears to subside spontaneously. An E.N.T. specialist has examined the throat and larynx and is equally puzzled. The taking of breakfast seems to cause some improvement.*

A.—Recurrent swelling of the tongue of short duration suggests a diagnosis of angioneurotic oedema. The lack of response to adrenaline and to one tablet of promethazine at night is not, of necessity, inconsistent with this diagnosis. The tongue is one of the parts most frequently affected. Just over 50% of cases of angioneurotic oedema have been found to be due to allergens, and the possibility of drugs or foods as the cause should be considered. Over a half of the allergic cases are found to be due to drugs, aspirin and the barbiturates being the commonest exciting agents. The nocturnal nature of the attacks would fit in with this possibility. It would be wise to stop all drugs, even the occasional sleeping-tablet, headache powders, or purgative, apart from antihistaminics and adrenaline preparations.

A food should also be considered as a possible cause, a careful dietary history being taken, and, if necessary, a food diary kept. One must remember that, with both foods and drugs, although some patients are acutely sensitive to the least trace of an allergen ingested, others only develop the oedema when a larger quantity than usual has been taken. Contact and inhalant allergens are only rarely a cause. There are a number of observations on focal

infections as a cause of angioneurotic oedema, and attacks are sometimes related to tonsillar or respiratory tract infections. Among the infrequent causes are parasitic allergy, insect allergy, and physical allergy.

There remains a large group of undetermined origin, and in addition psychogenic factors are thought to, and in many cases do, play a large part.

Symptomatically one would suggest trying isoprenaline, 10 to 20 mg., under the tongue as soon as the attack starts.

Use of Suppositories

Q.—*What are the advantages and disadvantages of using suppositories for drugs which can equally well be given parenterally? This is a common practice in some parts of Europe. Examples are bismuth suppositories for tonsillitis, calcium suppositories, suppositories containing sulpha drugs, and calciferol suppositories for rickets. Are these drugs satisfactorily absorbed per rectum?*

A.—There are no advantages in using suppositories to produce systemic effects which are not greatly outweighed by the disadvantages of this mode of administration. The main disadvantages are great variations in the speed and extent of absorption, the liability of either the drug or the base to produce proctitis, and, especially in children, the undesirability of attracting excessive and undesirable attention to the rectum. If for any reason, such as continued vomiting, a patient cannot take a drug by mouth it is better administered by injection. The alleged advantage of the rectal route—that drugs thereby avoid passing through the liver—can rarely be significant. In none of the examples given in the question is there the slightest justification for the use of suppositories, and consistent therapeutic effects could not be expected.

Inheritance of Amyotonia Congenita

Q.—*A young couple—the wife is now 24—had a normal child seven years ago. The next child was born five years later, but died within 10 weeks. The diagnosis was amyotonia congenita. The mother was encouraged to have another baby. Unfortunately, however, the next child, born one year later, died from the same cause at approximately the same age. There is no paternal or maternal family history of anything resembling this condition. What advice can I give this young mother of the risks of the same condition occurring in another pregnancy?*

A.—The classification of amyotonia congenita presents difficulties, and the genetics of the condition or conditions are not entirely straightforward. Nevertheless it is clear that a recessive gene is often responsible, and in view of the birth of two affected children to this couple there can be hardly any doubt of it in this particular instance. The chance that any subsequent child will be similarly affected is therefore one in four.

Diagnosis of Early Pregnancy

Q.—*How soon after fertilization may a confident diagnosis of pregnancy be made or excluded? What is the best test for the purpose? A woman who ceased lactation at the sixth week thinks she is now pregnant again (tenth week). Does a recent delivery have any effect on the accuracy of pregnancy tests?*

A.—The most certain method of diagnosing early pregnancy is by carrying out a biological test on the *first* morning specimen of urine. There are several different tests available, but all have the same principle—namely, the demonstration of gonadotrophins in the urine. This can be done by injecting urine into immature female mice (Aschheim–Zondek test); into female rabbits (Friedman test); into female South African toads (Hogben test), or into male toads and frogs of various kinds. All these tests carry a 95 to 98% degree of accuracy, provided they are carried out by someone experienced in the particular test employed. Their results are reliable by the twenty-eighth day after fertilization, and a positive finding is often obtained, and can be accepted, a week earlier.

The test becomes negative within two to seven days after labour or abortion, so that the history of a delivery 10 weeks previously does not affect its reliability.

Metal Fume Fever

Q.—*Is metal fume fever a well-recognized hazard in welding shops? Please describe its symptomatology and treatment. Where can I find further information about it? Are there any regulations under the Factory Acts or elsewhere regarding its control in welding shops?*

A.—Metal fume fever is prevalent in shops where welding of galvanized metal is done under conditions of poor ventilation; but it is rarely seen as a result of welding non-galvanized metals. It can arise, however, from metallic fumes and oxides other than zinc, and for a full discussion of them see *The Health of Welders*, by A. T. Doig and L. N. Duguid (H.M.S.O., 1951).

The typical symptoms, which come on about six hours after exposure to zinc oxide fumes, consist in shivering, pains in the limbs and joints, headaches, tightness of the chest, and fever, associated with leucocytosis. The fever lasts about an hour and then falls suddenly with profuse sweating. The attack closely resembles a malarial paroxysm. Usually the patient feels quite well the following day, and while the leucocytosis persists he does not get further attacks. There is no specific treatment, but some authors advise that it should be treated with acetylsalicylic acid and codeine, together with hot drinks.

There are no special regulations for the control of metal fume fever in welding shops, but the matter is usually dealt with (under Section 47 of the Factories Act, 1937) by applying exhaust ventilation to the welding of galvanized metal.

NOTES AND COMMENTS

Ultra-violet Light for Vitamin-D Deficiency in the Tropics.—Dr. E. S. REED (London, N.W.10) writes: An interesting and, I believe, important point not mentioned by you arises from the question on vitamin-D deficiency in the Tropics ("Any Questions?" July 17, p. 188). It is now believed—and I quote from Professor B. S. Platt, Professor of Human Nutrition at the London School of Hygiene and Tropical Medicine, with his kind permission—that, where there are dermal changes due to vitamin-A deficiency, sunlight (as ultra-violet light, of course) may not be able to synthesize vitamin D from the precursor in, or perhaps more correctly on, the skin. Rickets is, therefore, quite a possibility, and in fact does occur in the grossly undernourished in the Tropics despite abundant sunshine.

Refresher Course Books.—The first two volumes of collected articles from the Refresher Course for General Practitioners published in the *Journal* are now available. The first volume contains 55 articles and the second 60. Each article has been revised by its author. Copies of both volumes may be obtained, price 25s. (postage 1s.) each, direct from the Publishing Manager, B.M.A. House, Tavistock Square, London, W.C.1, or from booksellers. The second book of **"Any Questions?"** is also available, price 7s. 6d. (postage 6d.).

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